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Pamphlets on forest improvements.

FORESTRY PAMPHLETS

Improvements

Vol. IV

Section on Buildings. District 5 Improvement Circular. May 1, 1917.

Buildings, Series No. 1.

Plan No. 1-A. Four Room Dwelling.
Plan No. 1-B. Four Room Ranger Dwelling.
Plan No. 1-C. Office and Store Room.
Plan No. 1-D. One Room Office.
Plan No. 1-E. Two Room Office. (Office and Bedroom)
Plan No. 1-F. Office and Kitchen.

Buildings, Series No. 2.

Plan No. 2-A. Four Horse Barn.
Plan No. 2-B. Four-Horse Barn.
Plan No. 2-C. Six-Horse Barn.
Plan No. 2-D. Barn and Wagon Shed.
Plan No. 2-E. Barn with Center Driveway.
Plan No. 2-F. Barn and Wagon Shed.

General Service Buildings, Series No. 3.
Warehouse. Plan No. 3-B.
8' x 8' - 8' Walls, ½ Pitch Roof, etc.
Woodshed and Cooler. Plan No. 3-C.
Workshop. Plan No. 3-D.

Buildings. Series No. 4.

Plan No. 4-A. Primary Lookout Building.
Plan No. 4-B. Secondary Lookout.
Plan No. 4-C. One Room Fireman's Dwelling.
Plan No. 4-D. Cabin for Ranger Shelter.

Buildings. Observation Booth.

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" " " " " Door Casings - - - - - - - 1
" " " " " Drain Boards - - - - - - - 1
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" " " " " Flooring - - - - - - - - - 2 & 3
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" " B.M.-2. Detail of Siding and Roofing
" " B.M.-3. Plan of Door and Window
" " B.M.-4. Illustrations of Flat Head Wood Screws
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" 1-B. Four-Room Ranger Dwelling
" 1-C. Office and Store Room
" 1-D. One-Room Office
" 1-E. Two-Room Office
" 1-F. Office and Kitchen

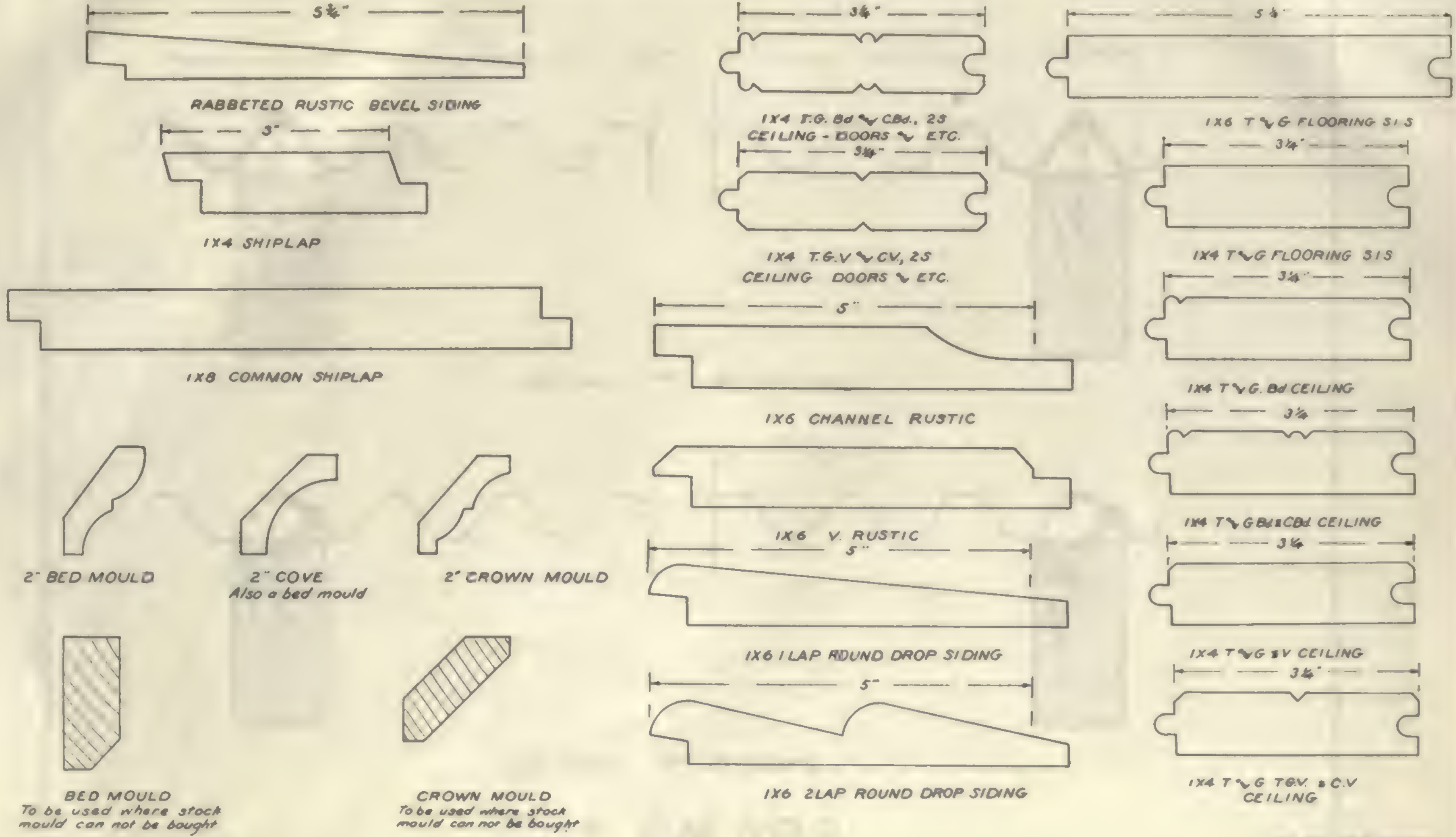
" 2-A. Four-Horse Barn, 16' x 24'
" 2-B. Four-Horse Barn, 16' x 16'
" 2-C. Six-Horse Barn, Mansard and 1/2 Pitch Roof
" 2-D. Barn and Wagon Shed
" 2-E. Barn with Center Driveway
" 2-F. Barn with Wagon Shed

" 3-B. General Service Buildings
    8' x 8' - 8' Walls
    12' x12' - 8' "
    12' x14' - 8' "
    14' x16' - 8' "
    16' x24' -12' " (Warehouse)
" 3-C. Woodshed and Cooler
" 3-D. Workshop

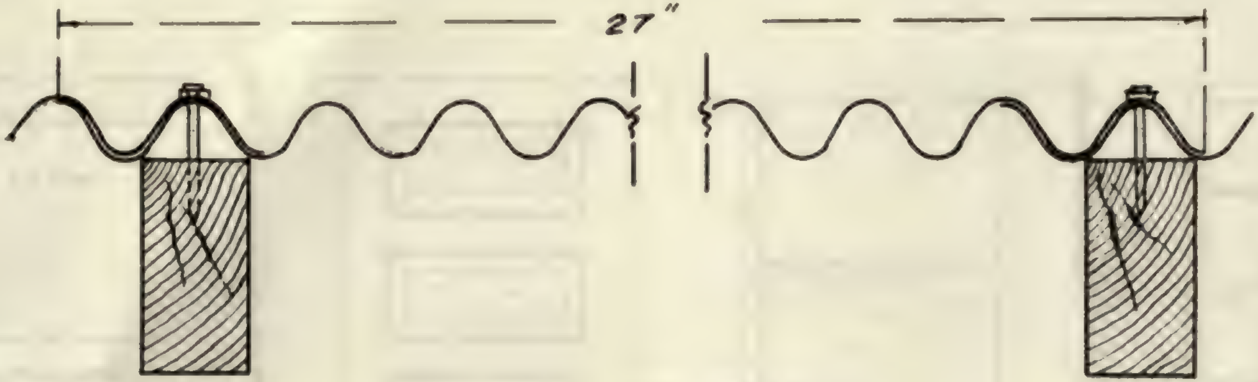
" 4-A. Primary Lookout Building
" 4-B. Secondary Lookout Building
" 4-C. One-Room Fireman Dwelling
" 4-D. Cabin for Ranger Shelter

Observation Booth

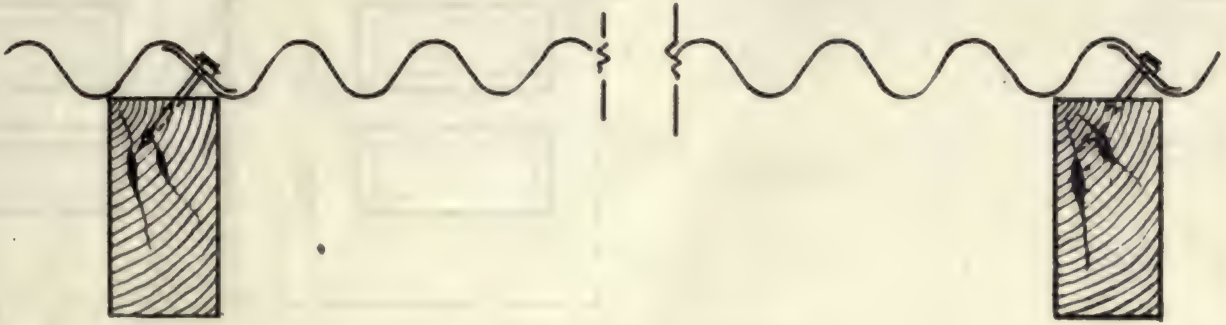
Sanitary Latrine, Design No. 1
" " " No. 2
" " " No. 3
" " " No. 4
" " Cut LRS-3


5¼"
RABBETED RUSTIC BEVEL SIDING
3"
1X4 SHIPLAP
1X8 COMMON SHIPLAP
2" BED MOULD
2" COVE
Also a bed mould
2" CROWN MOULD
BED MOULD
To be used where stock mould can not be bought
CROWN MOULD
To be used where stock mould can not be bought
3¼"
1X4 T.G. Bd & C.Bd., 2S
CEILING - DOORS & ETC.
3¼"
1X4 T.G.V & C.V., 2S
CEILING DOORS & ETC.
5"
1X6 CHANNEL RUSTIC
1X6 V. RUSTIC
5"
1X6 1 LAP ROUND DROP SIDING
5"
1X6 2LAP ROUND DROP SIDING
5¼"
1X6 T & G FLOORING S1S
3¼"
1X4 T & G FLOORING S1S
3¼"
1X4 T & G. Bd CEILING
3¼
1X4 T & G Bd & CBd CEILING
3¼
1X4 T & G & V CEILING
3¼"
1X4 T & G T.G.V. & C.V
CEILING

CUT B.M.NO.1

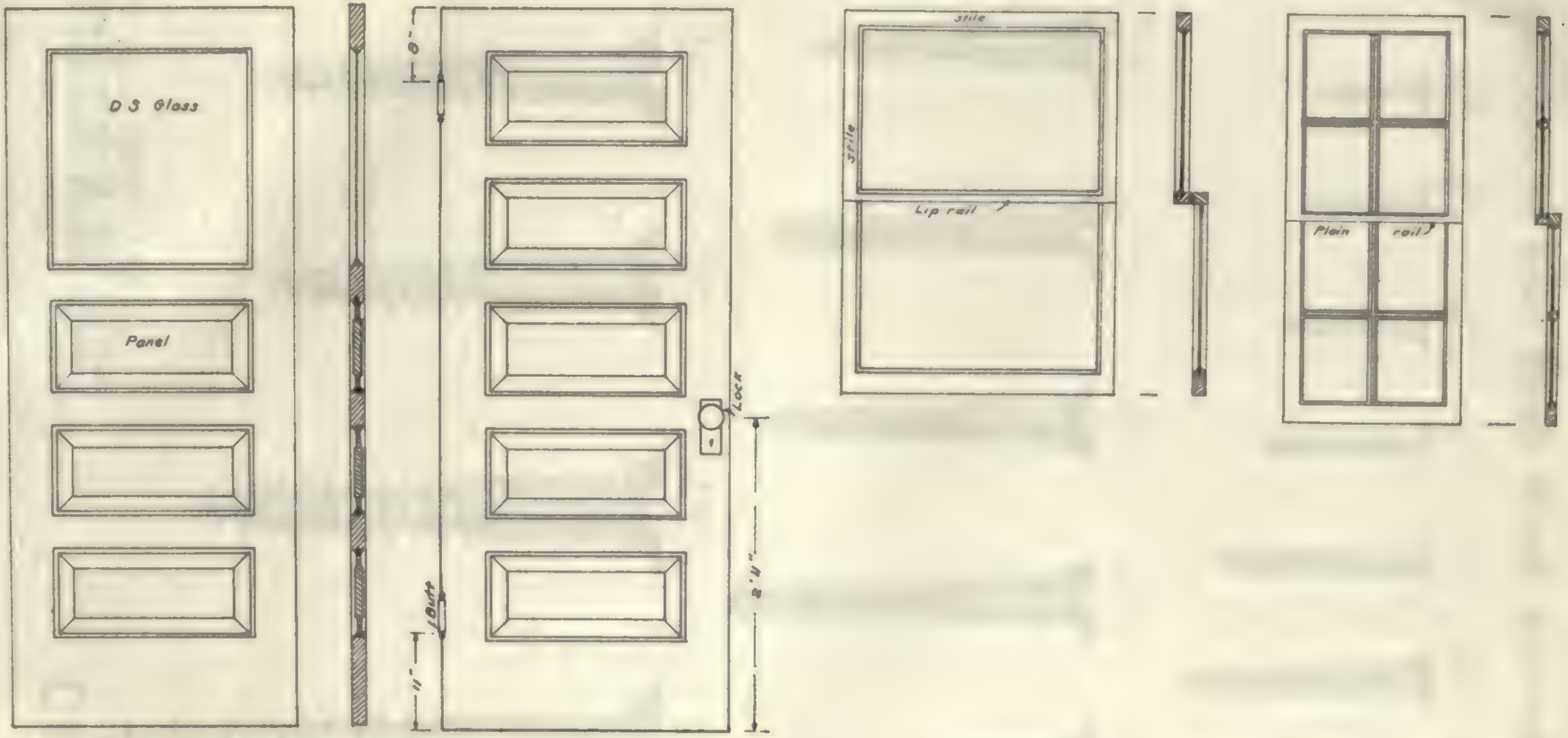


DETAIL OF ROOFING



DETAIL OF SIDING

CUT B.M. NO.2


D S Glass
Panel
8"
Butt
11"
Lock
2'4"
stile
stile
Lip rail
Plain rail

CUT B.M.NO.3

Illustrations of Flat Head Wood Screws

⅜ in.
No. 3

½ in.
No. 4

⅝ in.
No. 5

¾ in.
No. 6

⅞ in.
No. 7

1 in.
No. 8

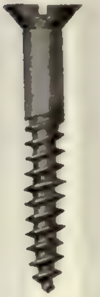
1¼ in.
No. 9

1½ in.
No 10

1½ in.
No. 11

1¾ i.n
No. 12

1¾ in.
No. 13



2 in.
No. 14

2 in.
No. 15

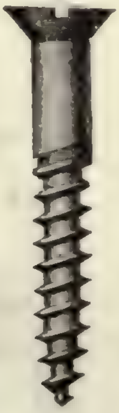
2¼ in.
No. 16

2¼ in.
No. 17

2½ in.
No. 18

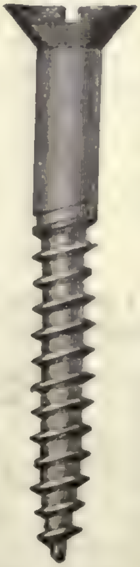
2½ in.
No. 20

2½ in.
No. 22



3 in.
No. 24

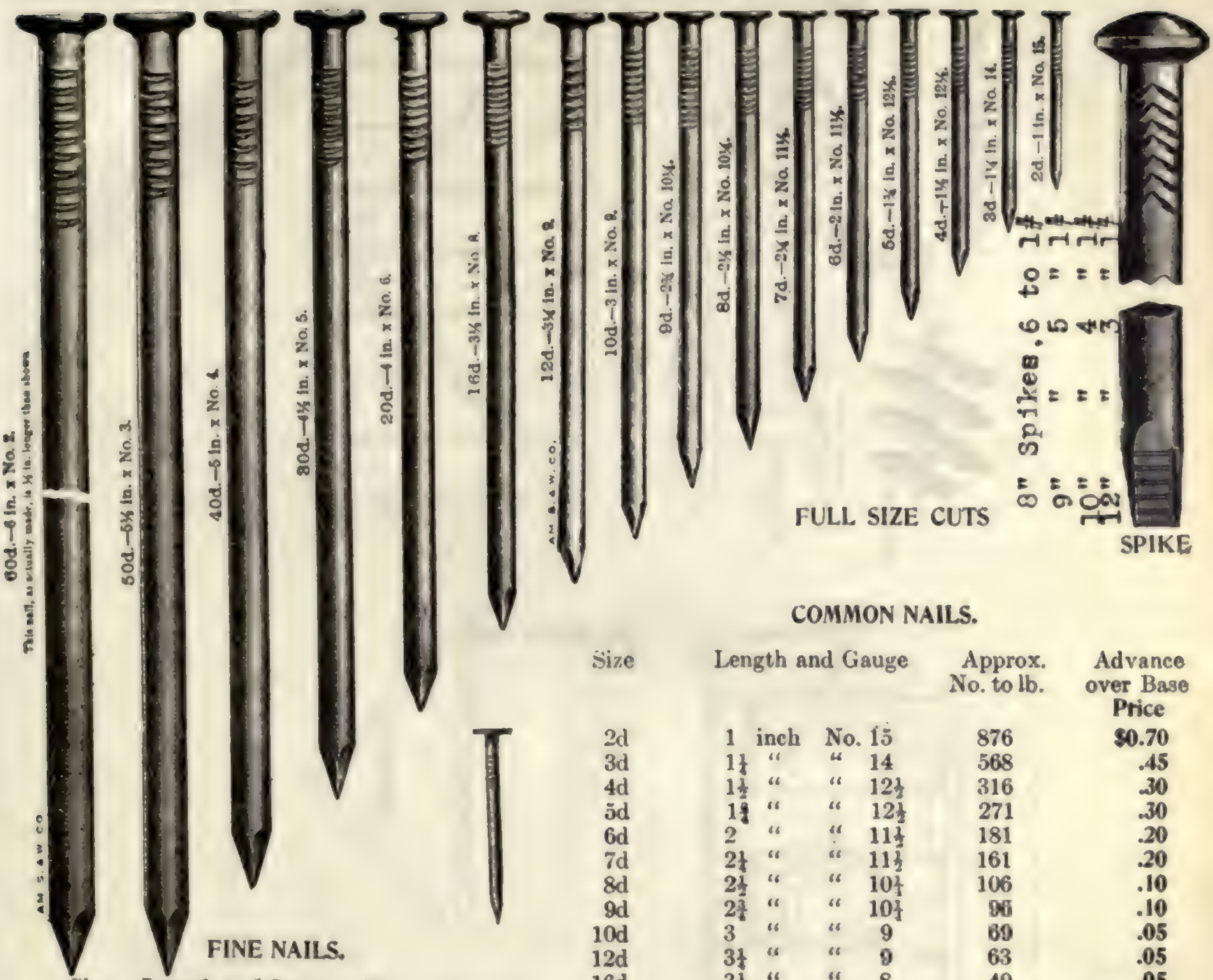
3½ in.
No. 26



ROUND HEAD SCREWS AND
BLUED OR BRASS COME IN SAME SIZES
SCREWS ARE SOLD BY THE GROSS

CUT B.M4

Steel Wire Nails


60d.—6 in. x No. 2.
This nail, as actually made, is ½ in. longer than shown
50d.—5½ in. x No. 3.
40d.—5 in. x No. 4.
30d.—4½ in. x No. 5.
20d.—4 in. x No. 6.
16d.—3½ in. x No. 8.
12d.—3¼ in. x No. 9.
10d.—3 in. x No. 9.
9d.—2¾ in. x No. 10¼.
8d.—2½ in. x No. 10¼.
7d.—2¼ in. x No. 11½.
6d.—2 in. x No. 11½.
5d.—1¾ in. x No. 12½.
4d.—1½ in. x No. 12½.
3d.—1¼ in. x No. 14.
2d.—1 in. x No. 15.
AM. S. & W. CO.
8" Spikes, 6 to 1
9" " 5 " 1
10" " 4 " 1
12" " 3 " 1
SPIKE

FULL SIZE CUTS

COMMON NAILS.

Size	Length and Gauge			Approx. No. to lb.	Advance over Base Price
2d	1	inch	No. 15	876	$0.70
3d	1¼	"	" 14	568	.45
4d	1½	"	" 12½	316	.30
5d	1¾	"	" 12½	271	.30
6d	2	"	" 11½	181	.20
7d	2¼	"	" 11½	161	.20
8d	2½	"	" 10¼	106	.10
9d	2¾	"	" 10¼	96	.10
10d	3	"	" 9	69	.05
12d	3¼	"	" 9	63	.05
16d	3½	"	" 8	49	.05
20d	4	"	" 6	31	Base
30d	4½	"	" 5	24	"
40d	5	"	" 4	18	"
50d.	5½	"	" 3	14	"
60d	6	"	" 2	11	"

One hundred pounds in a keg.

FINE NAILS.

Size	Length and Gauge Inch	No.	No. to lb.	Advance
2d	1	17	1351	$1.00
3d	1¼	15	778	.50
4d	1½	14	473	.50

CASING NAILS.

Size	Length and Gauge Inch	No.	No. to lb.	Advance
2d	1	15½	1010	$1.00
3d	1¼	14½	635	.70
4d	1½	14	473	.50
5d	1¾	14	406	.50
6d	2	12½	236	.35
7d	2¼	12½	210	.35
8d	2½	11½	145	.25
9d	2¾	11½	132	.25
10d	3	10½	94	.15
12d	3¼	10½	87	.15
16d	3½	10	71	.15
20d	4	9	52	.15
30d	4½	9	46	.15
40d	5	8	35	.15

FINISHING NAILS.

Size	Length and Gauge Inch	No.	No. to lb.	Advance
2d	1	16½	1351	$1.15
3d	1¼	15½	807	.85
4d	1½	15	584	.65
5d	1¾	15	500	.65
6d	2	13½	309	.45
7d	2¼	13	238	.45
8d	2½	12½	189	.35
9d	2¾	12½	172	.35
10d	3	11½	121	.25
12d	3¼	11½	113	.25
16d	3½	11	90	.25
20d	4	10	62	.25

CUT B M 5

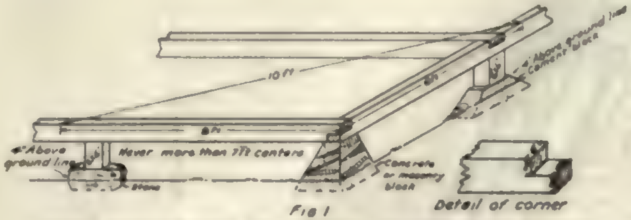


Fig 1

SHOWING DIFFERENT KINDS OF ACCEPTABLE FOUNDATIONS FOR BUILDING

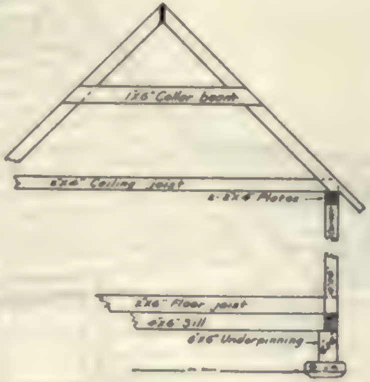


Fig 3

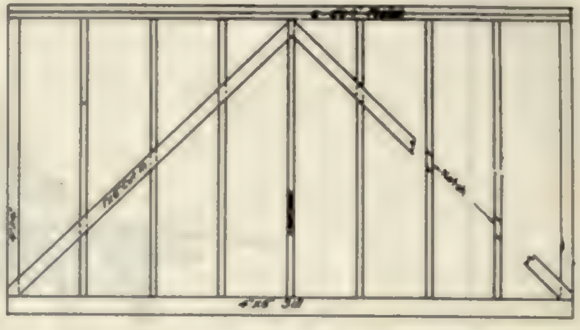
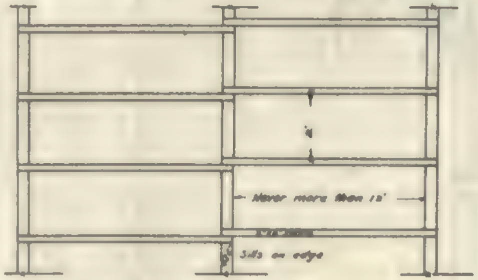


Fig 5



SHOWING PROPER METHOD OF PLACING FLOOR JOIST

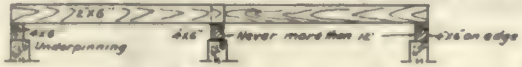


Fig 2

Cross section of floor joists and sills

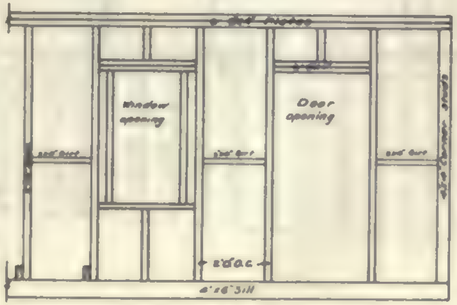


Fig 4

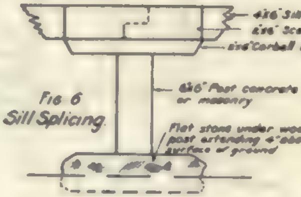

4"x6" Sill
2"x6" Scab over splice where practicable to use it
2"x6" Corbell under splice
6"x6" Post concrete or masonry
Flat stone under wood post extending 4" above surface of ground

Fig 6
Sill Splicing

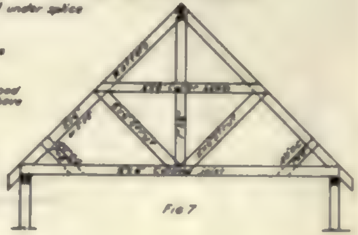


Fig 7

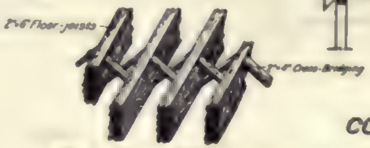
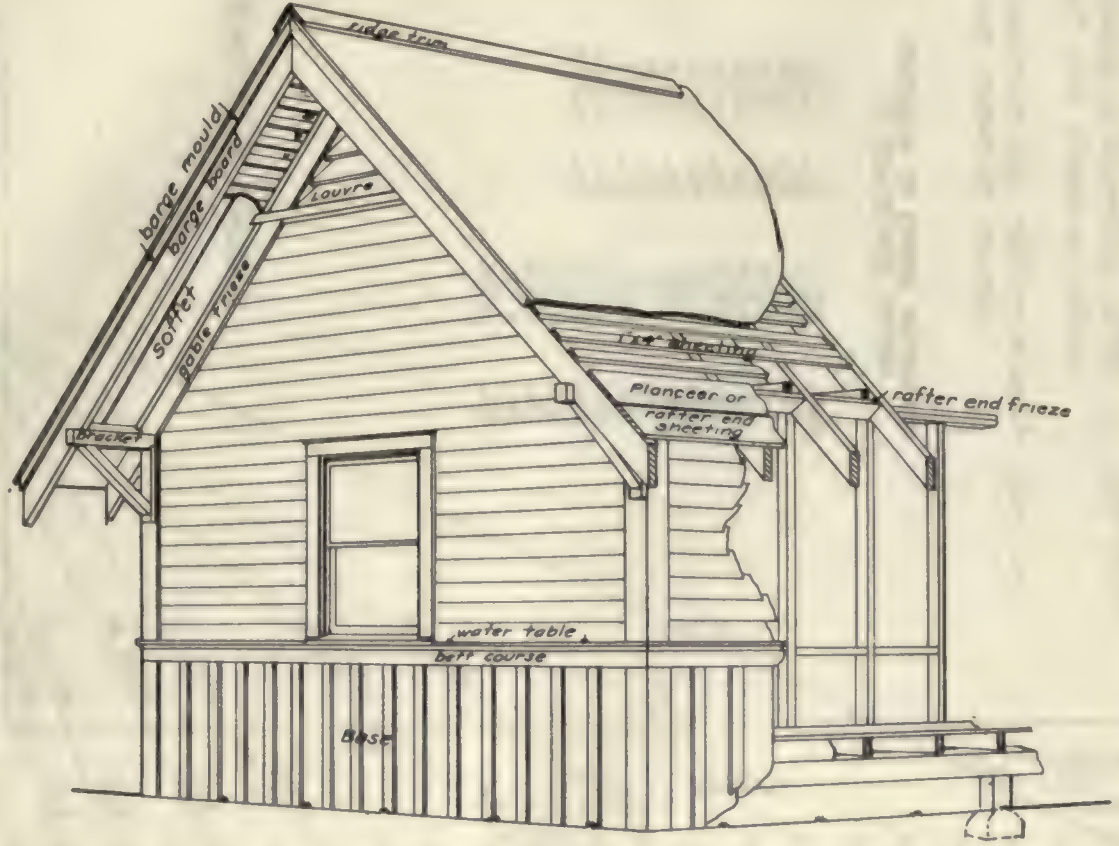


Fig 8 Cross-Bridging.

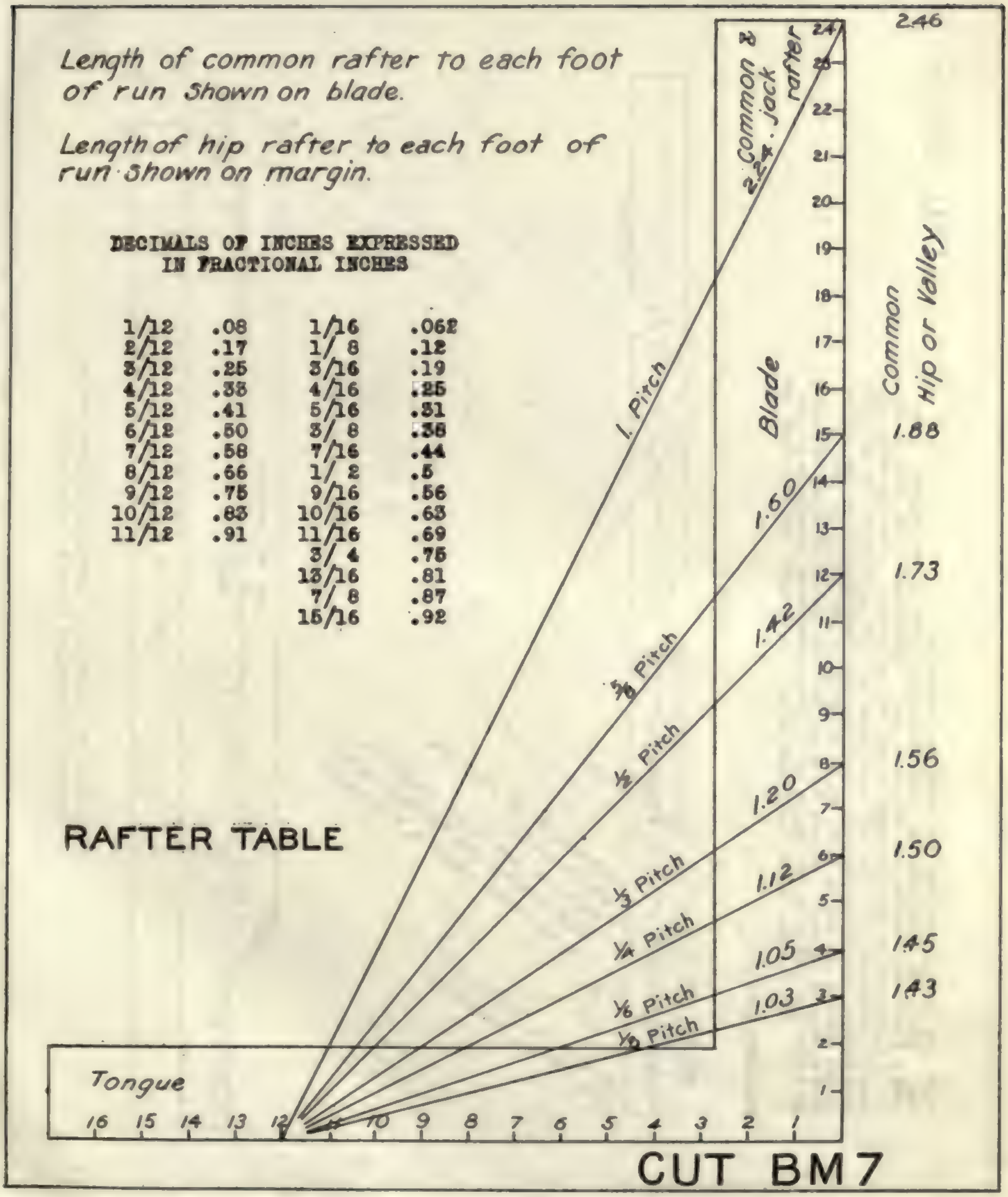
CONSTRUCTION DETAIL
CUT NO. B.M. 6



Cut showing names of various parts of bldgs.
not commonly Known.

CUT-NO. BM.6a

C.D.M. 5-12-17



Length of common rafter to each foot of run shown on blade.

Length of hip rafter to each foot of run shown on margin.

DECIMALS OF INCHES EXPRESSED IN FRACTIONAL INCHES

1/12	.08	1/16	.062
2/12	.17	1/ 8	.12
3/12	.25	3/16	.19
4/12	.33	4/16	.25
5/12	.41	5/16	.31
6/12	.50	3/ 8	.38
7/12	.58	7/16	.44
8/12	.66	1/ 2	.5
9/12	.75	9/16	.56
10/12	.83	10/16	.63
11/12	.91	11/16	.69
		3/ 4	.75
		13/16	.81
		7/ 8	.87
		15/16	.92

RAFTER TABLE

CUT BM7

Showing method of cutting jock rafter
Bottom and plumb cut same as common rafter

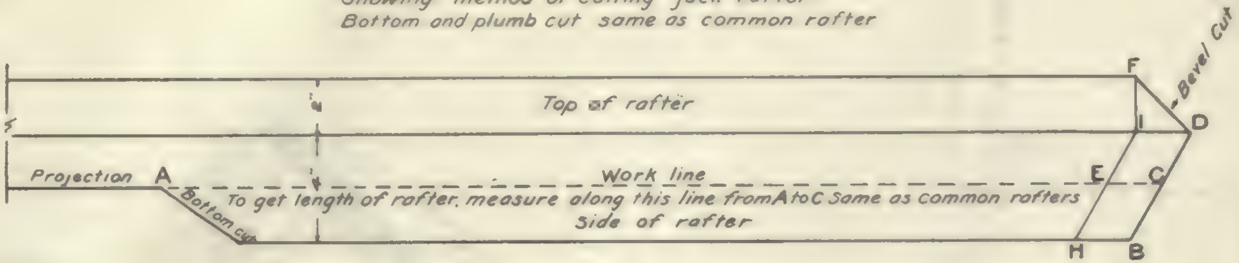

Top of rafter
F
D
Bevel Cut
I
Projection
A
Work line
E
C
Bottom cut
To get length of rafter. measure along this line from A to C Same as common rafters
Side of rafter
H
B

Fig. 6

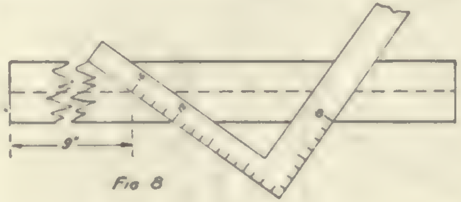


Fig 8

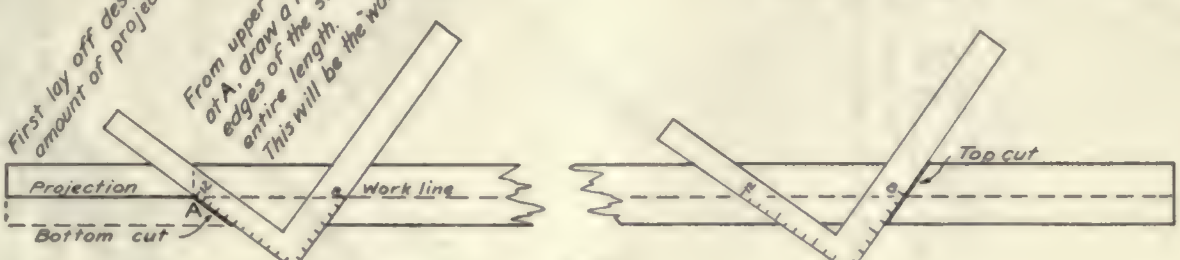
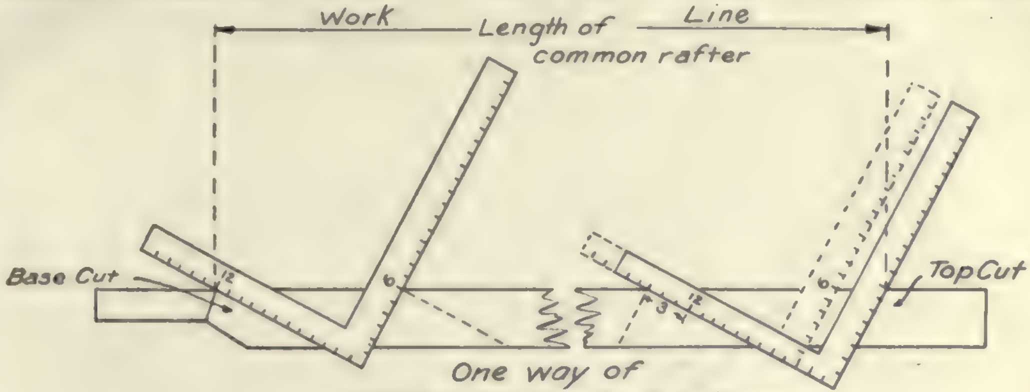

First lay off desirable amount of projection.
From upper limits of projection at A, draw a line parallel to the edges of the stick through its entire length.
This will be the work line
Projection
Work line
A
Bottom cut
Top cut

Fig. 7

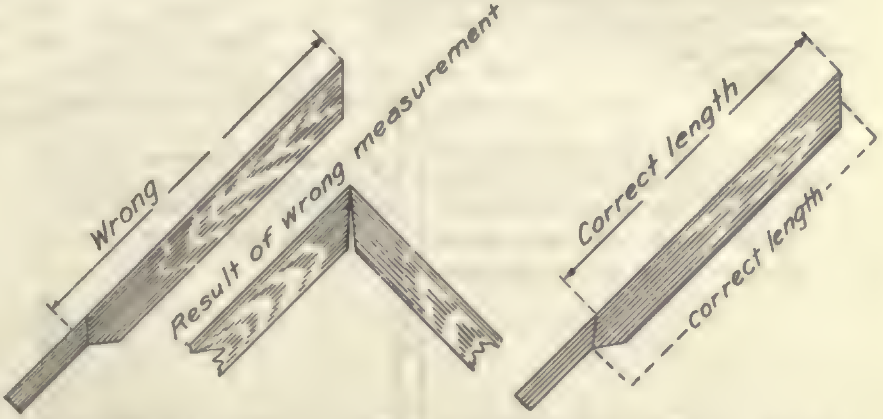
Reference Fig. 6.

Lay out the rafter projection first. This done, lay out along the work line the length of the rafter AC. (This measurement should be to the long side of a rafter). At the point "C" lay off the top or plumb cut which is the same as the top or plumb cut of a common rafter (refer to Fig. 7). Then measure back along the work line a distance corresponding to the thickness of the rafter CE. At this point draw the line IH parallel to the line BD. (This line is just the same as the top cut line). From the point "I" draw a line square across the rafter to "F". Then draw a line from "F" to "D". This line represents the bevel cut of the back of the rafter. Saw along the line FDB and you will have the proper cut.

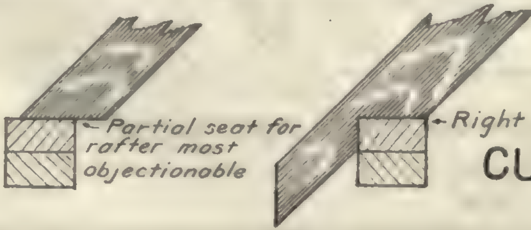
CUT BM 8



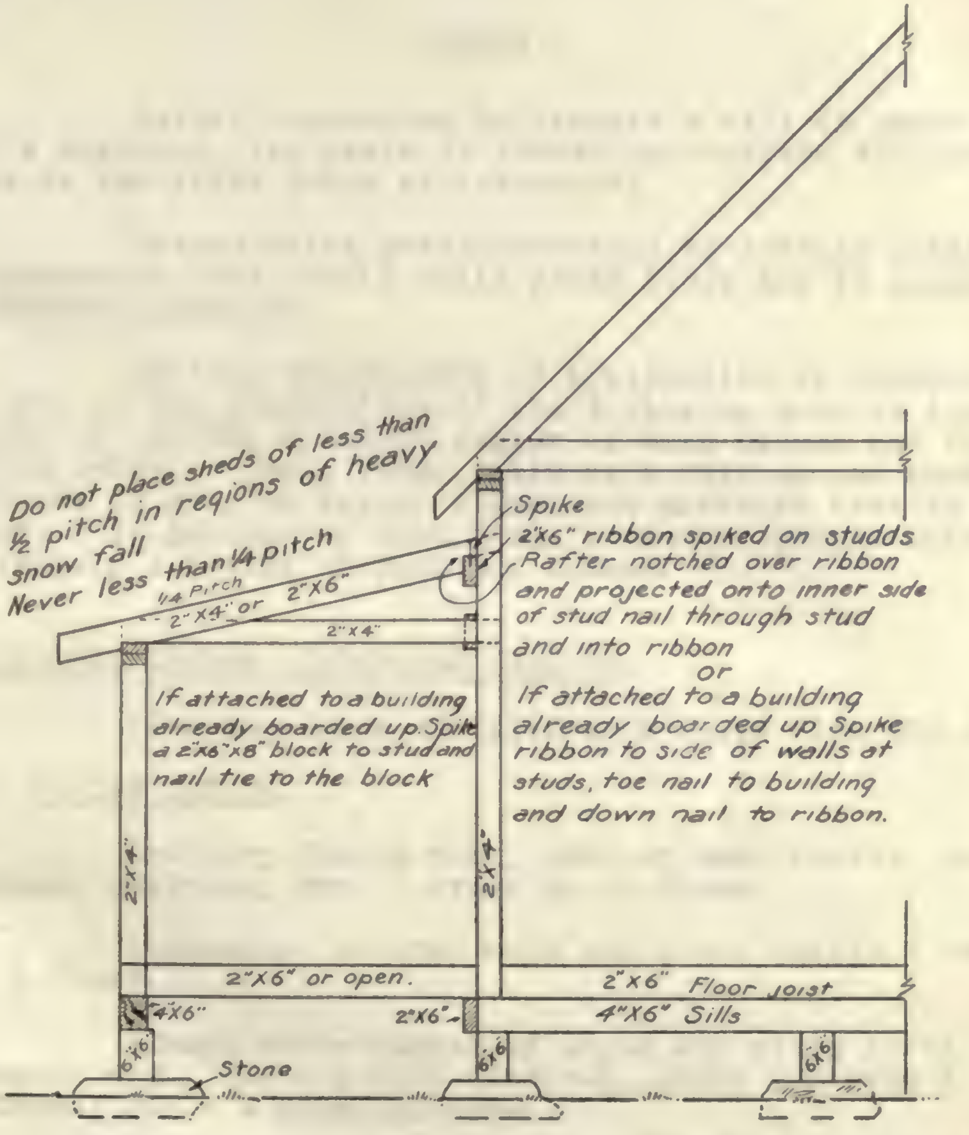
One way of getting the length of rafters



Wrong and right methods of figuring rafter lengths



CUT BM 9



Do not place sheds of less than 1/2 pitch in regions of heavy snow fall

Never less than 1/4 pitch

2"X6" ribbon spiked on studds

Rafter notched over ribbon and projected onto inner side of stud nail through stud and into ribbon

or

If attached to a building already boarded up Spike ribbon to side of walls at studs, toe nail to building and down nail to ribbon.

If attached to a building already boarded up. Spike a 2"X6"X8" block to stud and nail tie to the block

SHOWING METHOD OF CONSTRUCTING SHED ADDITIONS

CUT BM10

BUILDING MATERIAL

LUMBER

Before commencing to prepare a bill of lumber for a building, the grade of lumber appropriate for specific uses is the first thing to determine.

Oregon mills grade according to certain established standards; California mills grade finer and to somewhat different standards.

In term practicable of application an endeavor is made in the preparation of the following data to list grades of various kinds of lumber of both Oregon and California makes. Small local mills as a rule do not make any pretense of grading beyond clear, and material that is not clear. In purchasing from them, to secure proper material is largely a matter of pick and choose.

CALIFORNIA LUMBER (EXCEPTING REDWOOD)

(Grading Rules of California White Pine Mfg.Assn.)

FINISH LUMBER.

Ordinary finish work, such as base boards, door casings, shelving, etc. - order No. 2 Clear.

Cupboards, cabinet work and drain boards - order No. 1 Clear.

Always state number of edges and sides to be dressed, e.g., S1S = 1 side surfaced; S1S2E = 1 side 2 edges surfaced; S4S = 4 sides surfaced.

FRAMING LUMBER.

Rafters (ordinary), floor joists and all joists 2 feet in thickness or over which are designed to carry heavy loads - order No. 2 Clear, rough.

Rafters and ceiling joists in regions of heavy snowfall, - order No. 1 Clear 2" x 6" rough for buildings with partitions; 2" x 8" for all two story barns and buildings 16 feet wide without partitions (Douglas fir 1st choice) (2nd, white fir), (3rd, yellow pine).

SIDING.

(See Cut No. B.M.-1)

Siding of various kinds is made in three grades, i.e., "B and Better", "C" and "D". The "C" grade is specified in the Manual as standard for all milled siding. Use this grade generally for repairs and miscellaneous construction.

FLOOR AND CEILING.

(See Cut No. B.M.-1)

Flooring and ceiling cut in California mills is usually segregated into three grades, i.e., "B"and better, "C" and "D". "D" vertical flooring and "C" ceiling has been specified as standard in this Manual. Use this grade generally for repair work and in miscellaneous building.

COMMON LUMBER.

Common lumber for building purposes is sold in four grades, i.e., No. 1, No. 2, No. 3 and No. 4 Common.

For general work No. 1 Common has been specified as standard in this Manual. For joists or beam members, always select the best sticks of this grade.

No. 2 Common or lower grade may be used for roof sheeting, secondary partitions, stall partitions, etc.

No. 3 or 4 Common is suitable only for concrete forms, etc.

OREGON LUMBER.

(Classification of Grades of January 1, 1913).

FINISHING - DOUGLAS FIR.

Select grain is the best grade; corresponds to No. 1 Clear of California lumber.

No. 2 Clear and better, the second grade - specify it in ordering finish material from Oregon Markets or from yards selling Oregon lumber.

SIDING - DOUGLAS FIR.

(See Cut No. B.M.-1)

Siding is sold in four grades: No. 2 Clear and Better, No. 3 Clear and No. 4 Clear. No. 2 and Better corresponds closely to "B and Better" of California lumber. No. 3 corresponds to "C" of California lumber. Specify No.3 Clear when ordering Oregon lumber.

FLOORING - VERTICAL GRAIN, DOUGLAS FIR.

Vertical grain Douglas fir flooring is manufactured in three grades: No. 1 Clear, No. 2 Clear and No. 3 Clear.

Specify No. 2 Clear in Oregon flooring lumber.

CEILING - DOUGLAS FIR.

(See Cut No. B.M.-1)

Ceiling is made in No. 2 Clear and Better, No. 3 Clear and No. 4 Clear. Specify No. 3 Clear in ordering Oregon lumber.

BOARDS - DOUGLAS FIR.

Select Common.for all house siding, rough flooring, rough partitions, porch floors, etc. Specify this grade in buying Oregon lumber.

BOARDS - COMMON.

For barn flooring, partitions and rough buildings specify boards of this grade in buying Oregon lumber.

SCANTLING, ETC. - DOUGLAS FIR.
(Sold as Timber in Oregon Markets)

Select Common. For all ordinary construction, studding, rafters, floor joists, etc., specify this grade in ordering Oregon lumber.

For rafter and ceiling joists for all buildings with partitions in regions of heavy snowfall, order "Rough Clear Stock" 2" x 6" and 2" x 6" ceiling joists. Order 2" x 8" and 2" x 6" ceiling joists for buildings over 16 feet wide without partitions and for two story barns.

REDWOOD.

(Grading Rules of April 22, 1914).

Refinement in the grading of redwood is far lower than that of other California lumber.

Uppers are divided into three grades: Clear, Sap Clear and Select.

Specify Clear redwood for all finish work, and Select redwood for miscellaneous uses, such as rough inside walls, rough ceiling, finish ceiling, barge and outside trim, rough outside walls, rustic,drop siding, etc.

Specify Common No. 1 for barn partitions, stall partitions and other rough work.

Redwood is not well adapted for floors and members designed to carry heavy loads. Except for narrow buildings in the southern part of the State where there is no snowfall, redwood should not be used for rafters; neither should it be used for joists in barns or dwellings where sill centers are greater than 6 feet.

ROOFING.

SHINGLES.

For dwellings and all living quarters red cedar, Extra Star A Star shingles are stated as the standard for use in all Forest Service work in District 5. An exception to this rule will meet with approval only where it is clearly prohibitive to haul Star A Star shingles to isolated places. In such cases shingles or shakes of local manufacture may be used.

The following table gives the number of shingles of different exposures to weather necessary to cover one square foot of roof surface.

SHINGLES PER SQ. FT.

Table No. B.M.-1

Inches to Weather	No. Shingles Maximum	Minimum	Notes
4	10	9.50	Maximum figures allow liberally for ordinary waste. 3½# Fine galvanized wire shingle nails are necessary to lay 1000 shingles.
4½	9	8.33	
5	8	7.20	

Shingles are packed in bunches of approximately 250; weight per bunch ranges from 35 to 50 pounds.

LAYING THE SHINGLES.

Never use shingles on roofs having less pitch than 1/4.

Correct Exposure of Shingles.

Roof less than 1/3 pitch to 1/4 pitch - 4 Inches to weather
Roof 1/3 pitch or over - - - - - - - - - - 4½ " " "
Side walls - - - - - - - - - - - - - - - - - 5 " " "

Start at the eaves and lay first course 2-ply, giving the first course 2 inches projection over edge of crown mould, or sheeting if no mould is used, and 1 inch projection beyond sheeting at the gable. If not expert, use a straightedge to make sure courses are laid straight.

Shingles wider than 10 inches should be split.

Lay shingles so water will run with the grain.

Lay wet shingles close together. Leave 1/4 inch space between dry shingles.

Nail shingles 6 inches from butt and 1/2 inch from sides, and put from 2 to 3 nails in each shingle. Do not drive nail heads into the shingles. Use 3d. galvanized fine shingle nails.

Break all joints at least 1¼ inches. See to it that no break comes directly over another on any three consecutive courses.

A carpenter will lay an average of 1500 shingles per day (minimum).

SHAKES.

Where to use Star A Star red cedar shingles is impracticable, sugar pine, yellow pine, white or red fir, or redwood shakes may be used. The following table gives the number of shakes of different lengths laid at various exposures necessary to cover 100 square feet of roof surface; also the amount of nails in pounds and amount of 1" x 4" sheeting with 8d. nails.

Shakes are placed very much the same as shingles. The projection at the eaves and gables should be identical. The first course should always be double. Shakes for the first layer of the first course are usually just one-half of the length of a whole shake. In other words, saw a shake in pieces of equal length and use the section for the first course.

It is not advisable to nail shakes at the exposed ends if doing so can be avoided. However, tendency of shakes to "curl" or roll often makes end nailing necessary. If long exposures are used end nailing is necessary.

Centers of sheeting should always be the same as the exposure of the shakes to the weather.

SHAKES

NUMBER REQUIRED, AMOUNT OF SHEETING AND QUANTITY OF NAILS PER SQUARE FOR DIFFERENT SIZES

Table No. B.M.-2

Length Inches	Width Inches	Laid to Weather Inches	Shakes per Square Number	Box Nails 5d. Per Sq.-Lbs.	Box Nails 6d. Per Sq.-Lbs.	Sheeting 1 x 4 Per Sq.-Bd.Ft.	Sheeting Nails 8d. Lbs.
36	6	16	150	.8		30	1.1
* 36	6	10-2/3	225		2.0	40	1.4
34	6	15	160	.8		30	1.1
* 34	6	10	240		2.1	44	1.5
32	6	14	172	.9		34	1.2
* 32	6	9-1/3	258		2.2	47	1.6
30	6	13	185	1.0		34	1.2
* 30	6	8-2/3	277		2.4	50	1.7
28	6	12	200	1.0		37	1.3
* 28	6	8	300		2.6	54	1.9
26	6	11	219	1.1		40	1.4
24	6	10	240	1.2		44	1.5
22	6	9	267	1.4		50	1.7
20	6	8	300	1.5		54	1.9
18	6	7	343	1.7		60	2.0
16	6	6	400	2.0		70	2.4

Note:- The above figures are estimated actual amounts computed to the nearest whole number and tenths. To provide for loss in cull shakes, waste lumber cuts and nail loss, add 6% to the above amounts.

* When these length shakes are laid to weather as indicated there will be four shakes over each sheeting board and in such cases 6d. box nails should be used.

GALVANIZED IRON.

As a roof covering for barns, sheds, and miscellaneous outbuildings practical of purchase and delivery, no better material than galvanized corrugated iron can be found. Iron of good quality, of heavy gauge and properly galvanized will last as long as an ordinary frame building. Shingles ordinarily must be replaced at 10 to 15 year intervals.

As a comparison of initial cost per 100 square feet between iron roofing and shingles, counting shingles at $4.00 per thousand, labor at $3.00 per day, iron at $8.00 per 100 square feet, plus an average freight rate of 2¢ per pound, shingles will cost $10.25 and iron will cost $10.50.

Galvanized corrugated iron sheets are approximately 26 inches after corrugating and will lay 24 inches with a lap of one corrugation, see Cut No. B.M.-2. End lap should be 4 inches on 1/3 pitch roof and less, and 3 inches on roofs of more than 1/3 pitch. Laps must be taken into account in estimating quantities of iron required.

To fasten galvanized iron roofing, use 2 inch No. galvanized roofing nails with No. 8 lead washers. Lead washers not only make waterproof joints, but also prevent rust of the edges of the nail hole.

26-Gauge plain ridge cap 7½"x7½" should be used for comb finish. It is sold in 6, 7, 8, 9 and 10 foot lengths; weight approximately .35 pounds per foot.

GALVANIZED CORRUGATED IRON
STANDARD SIZES AND WEIGHTS OF SHEETS AND BUNDLES
AND NUMBER OF SHEETS TO BUNDLE
GAUGE 26 - STANDARD IN DISTRICT 5.

Table No. B.M.-3

Size of Sheet Stock Sizes	Weight Per Sheet	No. Sheets Per Bundle	Weight Per Bundle	Sq.Ft. Per Sheet	Weight Per 100 Sq.Ft.	Sq.Ft.Covering Capacity Per Sheet Side Lap Counted End Lap Not Counted
26 x 72	17.78	11	148	13.	98	12
26 x 84	13.74	11	151	15.16	98	14
26 x 96	15.71	10	157	17.33	98	16
26 x108	16.50	10	165	18.50	98	18
26 x120	19.63	8	157	21.66	98	20

Price not quoted on account of rapidly rising prices.

1# - 2d. Galvanized roof nails will be required for 100 Sq. of roofing.

½# - #8 Lead washers will be required for 100 Sq.Ft. of roofing.

Sheeting under galvanized iron may be of any material over 8 inches wide and not to exceed 2 inches in thickness, set on approximately 3 foot centers; 1" x 8" or 2" x 4" stuff is very satisfactory.

Two men will lay approximately 1000 square feet of galvanized roofing per day.

RUBBER OR FELT ROOFING (SO CALLED).

Roofing of this kind is not recommended for general use. Do not use it - (a) where it is necessary to shovel snow from buildings, (b) upon buildings from which snow slides, (c) where wide variation of temperatures occur; the expansion and contraction soon ruins it. No serious objection is made to its use where temperatures do not fluctuate widely. Many brands of so called rubber or felt roofing are sold. No particular brand is recommended. Always buy for permanent buildings a 3-ply roofing, sold as a leader by a reputable dealer.

In the Sierras and northern Forests, Supervisors are advised to use either shingles, shakes or galvanized iron.

Sheeting under felt roofing to secure a smooth surface and to prevent cracking of the roofing must be surfaced on one side. If felt roofing is to be laid on buildings specified in the Manual, double the amount of board feet of sheeting of 1" x 4" and substitute 1" x 10" or 1" x 12" S1S, and add 6 pounds of 10d. nails. To secure best results the roofing should be laid in a continuous strip over the ridge board from eave to eave, or on shed roofs lay it with slope of the roof and not at right angles to it.

A FEW DON'TS.

Don't lay felt roofing on a rough base.

Don't fix felt roofing when it is first unrolled.

Don't fail to unroll each length and leave it until it lies perfectly flat unaided.

Don't forget to lay the inside of the roll to the weather.

Don't nail felt roofing except at seams.

Don't nail the seams of felt roofing before applying the liquid cement.

Don't drive the nails so far through the seams as to flatten the washers. To do so will cause leaks.

Don't use turps or other spirits when painting felt roofing.

The following information is prepared from data on Mathoid Roofing sold by the Paraffine Paint Company of San Francisco and E. G. Judah of 2200 Sante Fe Avenue, Los Angeles. It ranks among the best.

Table No. B.M. - 4

	Rolls	Weight	Actual Covering Capacity per Roll	Cost - Each Approximate
Half Ply	Single	29#	100 Sq.Ft.	$ 1.50
	Double	58	200 "	3.00
Single Ply	Single	37#	100 "	1.75
	Double	74	200 "	3.50
Two Ply	Single	47#	100 "	2.50
	Double	94	200 "	5.00
Three Ply	Single	57#	100 "	3.00
	Double	104	200 "	6.00

Includes cement and nails, which are shipped with each order without special mention.

Full instructions for laying come in every roll.

Cost of laying felt roofing ranges between $1.00 and $1.50 per 100 square feet.

WINDOWS AND DOORS.

GLOSSARY AND TRADE TERMS.

The following definitions give the meaning of various terms used by window and door manufacturers in connection with the description of their products.

MULLION.

An upright or vertical bar, usually wider than the ordinary bar, dividing the glass in a sash; or a wide upright bar dividing two sashes in a frame.

MUNTIN.

Applies to any short or light bars,- either vertical or horizontal,- in a sash or in a door between panels not extending the full width or length of the article.

RAIL.

The cross or horizontal pieces of the framework of a sash or door.

MEETING RAILS.

The rails of a window which meet when the two sashes are hung and closed. Plain meeting rails are of the same thickness as the rest of the window. Check rails are rails sufficiently thicker than the window to fill the opening between the top and bottom sashes made by the parting strip in the frame. They are usually beveled. See Cut No. B.M.-3.

STILES.

The upright or vertical pieces of a sash or door applying particularly to sashes of windows.

SASH.

A sash indicates a single piece with a wide bottom rail, to fill a window opening or one-half of it.

In ordering sashes give number and arrangement of lights, and whether it is wanted with single or double strength glass. The universal rule in ordering sash is to give the width first, then the height and thickness.

WINDOWS.

The term windows means two pieces. Two-light window means 2 pieces, 1 light to each piece; four-light window means 2 lights to each piece,- and upper and lower sash made with the plain or check rail.

In ordering windows give number and arrangement of lights, thickness, and state whether single or double strength glass is desired. In ordering either sash or windows, state if jambs are square or radiating.

CASEMENTS.

A casement is a pair of sashes made to be hung on hinges to swing.

TRANSOM WINDOWS AND SASHES.

A transom is a window in which the meeting rails are placed above the center of the opening. A transom sash is a single unit, usually wider than it is high.

MEASUREMENTS.

OUTSIDE OPENINGS.

Measurements for the frame opening of any given article should be from outside to outside, and should alway be given in feet and inches,-- for example, door 2'6" x 6' window 2'6" x 4'0", For common stock size and weights of doors and windows see Table No. B.M.- 5.

WEIGHTS

Of all Common Size Doors and Windows.

Doors

Wh. ft. in.	Len. ft. in.	Th. in.	Wt. lbs.
2 0	6 0	1	19
2 0	6 6	1	20
2 6	6 6	1	24
2 0	6 0	1¼	27
2 0	6 6	1¼	28
2 6	6 6	1¼	34
2 0	6 8	1¼	29
2 6	6 8	1¼	34
2 8	6 8	1¼	37
2 0	6 0	1½	29
2 0	6 6	1½	30
2 6	6 6	1½	37
2 0	6 8	1½	31
2 6	6 8	1½	37
2 8	6 8	1½	40
2 0	6 10	1½	32
2 6	6 10	1½	38
2 10	6 10	1½	42
2 0	7 0	1½	33
2 6	7 0	1½	39
3 0	7 0	1½	46
2 6	7 6	1½	44
3 0	7 6	1½	52
2 6	8 0	1½	45
3 0	8 0	1½	55
2 6	6 8	1¾	44
2 8	6 8	1¾	46
2 6	6 10	1¾	47
2 10	6 10	1¾	50
2 6	7 0	1¾	47
3 0	7 0	1¾	55
2 6	7 6	1¾	50
3 0	7 6	1¾	58
2 6	8 0	1¼	53
3 0	8 0	1¾	60

Front Doors

2 8	6 8	1½	50
2 10	6 10	1½	53
3 0	7 0	1½	55
2 10	6 10	1¾	62
3 0	7 0	1¾	71

Glazed Windows

Wh. ft. in.	Len. ft. in.	Th. in.	Wt. lbs.
1 6	3 0	1½	10
1 6	4 0	1½	12
1 6	5 1	1½	14
1 6	5 9	1½	16
1 6	6 5	1½	18
1 6	7 1	1½	20
2 0	3 0	1½	14
2 0	4 0	1½	16
2 0	5 1	1½	20
2 0	5 9	1½	22
2 0	6 5	1½	24
2 0	7 1	1½	26
2 4	3 0	1½	16
2 4	4 0	1½	20
2 4	5 1	1½	22
2 4	5 9	1½	24
2 4	6 5	1½	26
2 4	7 1	1½	28
2 6	3 0	1½	16
2 6	4 0	1½	20
2 6	5 1	1½	24
2 6	5 9	1½	26
2 6	6 5	1½	28
2 6	7 1	1½	30
2 9⅝	3 0	1½	18
2 9⅝	4 0	1½	22
2 9⅝	5 1	1½	24
2 9⅝	5 9	1½	26
2 9⅝	6 5	1½	28
2 9⅝	7 1	1½	32
3 0	3 0	1½	18
3 0	4 0	1½	22
3 0	5 1	1½	28
3 0	5 9	1½	30
3 0	6 5	1½	32
3 0	7 1	1½	34
3 6	3 0	1½	22
3 6	4 0	1½	26
3 6	5 1	1½	30
3 6	5 9	1½	34
3 6	6 5	1½	38
3 6	7 1	1½	40
4 0	4 0	1½	28
4 0	5 1	1½	34

Glazed Windows

1½, 4 Light

Size		Wt. lbs.
12 x 24	1½	18
12 x 28	1½	22
12 x 30	1½	24
12 x 32	1½	24
12 x 36	1½	26
12 x 40	1½	28
13 x 28	1½	22
13 x 32	1½	24
13 x 36	1½	26
13 x 40	1½	28
15 x 28	1½	24
15 x 30	1½	26
15 x 32	1½	26
15 x 36	1½	28
15 x 40	1½	32

1¼, 12 Light

7 x 9	1¼	13
8 x 10	1¼	16
8 x 12	1¼	18
9 x 12	1¼	20
9 x 13	1¼	20
9 x 14	1¼	22
9 x 15	1¼	24
9 x 16	1¼	25
10 x 12	1¼	22
10 x 14	1¼	24
10 x 15	1¼	25
10 x 16	1¼	27

1½, 12 Light

9 x 12	1½	20
9 x 13	1½	22
10 x 12	1½	22
10 x 14	1½	24
10 x 15	1½	26
10 x 16	1½	26
10 x 18	1½	28
10 x 20	1½	32
12 x 16	1½	32
12 x 18	1½	34
12 x 20	1½	36
12 x 22	1½	38
12 x 24	1½	40

Sliding Doors

Wh. ft. in.	Len. ft. in.	Th. in.	Wt. lbs.
4 0	6 8	1¾	65
5 0	6 8	1¾	88
4 0	7 0	1¾	72
5 0	7 0	1¾	80
3 6	7 6	1¾	65
3 3	8 0	1¾	72
3 6	8 0	1¾	81
3 0	8 6	1¾	76
3 6	8 6	1¾	87
3 0	9 0	1¾	82
3 3	9 0	1¾	86
3 6	9 0	1¾	95

Single Sash Doors

2 6	6 6	1¼	33
2 8	6 8	1¼	36
2 6	6 6	1½	36
2 8	6 8	1½	39
2 6	6 10	1½	38
2 10	6 10	1½	40
2 6	7 0	1½	39
3 0	7 0	1½	44
2 10	6 10	1¾	47
3 0	7 0	1¾	51

Screen Doors

2 8	6 8	ob	21
2 8	6 8	pb	25
2 10	6 10	ob	23
2 10	6 10	pb	27
3 0	7 0	ob	25
3 0	7 0	pb	30

Weight

of Mouldings,

1 x 1 in., per 100

lineal feet, 15 lbs.

BM(13) TABLE NO. B.M. 5.

DOORS.

Doors, as is commonly known, come in various styles, the more common of which are shown by Cut No. B.M.-3.

In ordering always give width, height and thickness If special doors are ordered, that is, doors other than stock doors, give number and arrangement of panels desired. It is well when ordering special styles of doors or windows to submit a sketch or detail with the order. Remember it is economy to conform to stock sizes and styles as much as possible.

FRAMES.

In writing orders for frames specify -

Outside Door Frame

Size of door
Thickness of walls
Complete, with inside and outside casing
and stops (giving width of casings
and stops desired).
Door step
Threshold if desired
State whether walls are boarded or shingled.

Inside Door Frames.

Size of door
Thickness of walls
Complete, with casing for both walls and
stops
Threshold - if desired.

Window Casing.

Size of window (not of glass)
Thickness of walls
Complete, with inside and outside trim in
all its parts. (Give dimensions of
casings both inside and outside).
With or without sack weight provisions.
State whether walls are boarded or shingled.

See Detail No. 6-D.

It is suggested that a copy of Detail No. 6-D be submitted with every order for window and door frames. A reference to it should accompany the order. Extra copies may be requisitioned from the District Forester.

Well made door and window casings cost approximately $2.50 each, and weigh on an average of 60 pounds complete. Of course, the weight is altogether dependent upon the size of the casing.

COST OF MAKING BY HAND AND PLACING WINDOW AND DOOR FRAMES

Windows

Single sash - - - -	$ 1.00
Double " - - - -	2.25
Mullion - - - - -	2.75 to 3.25

Door	Inside door - - - -	$ 1.00
	Outside " - - - -	1.50

COST OF PLACING WINDOWS AND DOORS

Windows

Single sash - - - -	$ .50
Double " - - - -	.75

Door

*Inside door - - - -	$ 1.00
*Outside " - - - -	1.00

For purposes of rough estimates the cost of each opening of average size may be figured at $5.00.

* Includes fitting locks, etc.

ORDINARY LUMBER WASTE

In estimating quantities of ordinary ceiling, flooring and siding of different widths, increase actual measurement of surface to be covered by adding the percentage listed below. This is to allow for waste in milling, lapping and matching.

Ceiling and Flooring.

3 Inches wide	50%
4 " "	33%
6 " "	20%

Siding

4 Inches wide	33%
6 " "	20%
8 " "	16%

Shiplap

8 Inches wide	16%
10 " "	12%

Weights of Lumber
Per Board Foot (Approximate)

Common rough, air dried -

1 Inch and thicker

Douglas fir	3 t to 4 #
Yellow pine	2.75 to 3.25#
Redwood	2.50 to 3.00#

1 Inch and thicker S1S2E

Douglas fir	2½ #
Pine	2.1 #
Ceiling 1/2	1 #
Ceiling and Floor 1" scant.	2 to 3#
Siding, average	2½ #

NAILS.

Correct nailing plays no small part in proper building construction. Over nailing of a member is as much to be condemned as under nailing. Nails too large are as weakening to the structure as nails undersized.

The following table will give an idea of the correct size of nails to provide for various members of buildings of different dimensions and the number needed per 1000 feet of lumber.

Table No. B.M.-6

Kind of Material	Distance Joist or Stud are Apart	No. Nails to Each Nailing Space	Size of Nail	Pounds of Nails
3/8 x 3'4" Battens		2-1' Apart	4d.	2
1" x 4" 1" "		2-1' "	6d.	3¼
1" x 4" Sheathing	24"	2	8d.	30
1" x 6" Siding or Flooring Rough	24"	2	8d.	20
1" x 8"	24"	2	10d.	23
1" x 10"	24"	3	10d.	27
1" x 12"	24"	3	15d.	23
2" x 10" Planking	24"	3	20d.	34
2" x 12" "	24"	3	20d.	28
Shiplap				
1" x 6"	24"	2	8d.	23
1" x 8"	24"	2	8d.	17
1" x 10"	24"	3	8d.	20
Siding			Finish	
½" x 4"	24"	1	6d.	6
½" x 6"	24"	2	6d.	14
1" x 4"	24"	1	8d.	11
1" x 6"	24"	2	8d.	17
Flooring				
1" x 4"	24"	1	6d.	6
1" x 6"	24"	1	6d.	8

Putting up studding and rafters will require approximately 15 pounds 10d. and 6 pounds 20d. wire nails per 1000 feet of studding.

Laying joists will require approximately 13 pounds 20d. wire nails per 1000 feet of joists, 2 at each side, 2 through bridging.

Finish - 1" dressed (base boards, etc.) will require approximately 20 pounds 8d. finish nails per 1000 fee

1" bracing will require about 20 pounds 10d. wire nails per 1000 feet.

2" bracing will require 35 pounds 20d. nails per 1000 feet.

Shingles will require 3½ pounds 3d. fine galvanized wire nails per 1000.

Shakes will require approximately 3 pounds 6d. box nails per 1000.

Refer to Cuts No. B.M.-4 and B.M.-5 for sizes and data for nails and screws.

LABOR COST FIGURES.

An average carpenter will frame and erect approximately the following amount of work in an 8-hour day in commcr frame buildings:

Joists, Sills, Plates, Etc.,	placed	in	position	- 500	B.
Bridging (cut)	"	"	"	- 40	Pr.
Studding	"	"	"	- 500	B.
Rafters, common	"	"	"	- 300	"
Roof sheeting	"	"	"	- 500	"
Boarding rough, putting on				- 900	"
Siding, milled				- 250	"
Corner boards, soffit, frieze, etc.				200 - 350	"
Flooring 1" x 4" Good work				- 400	"
" 1" x 4" Poor "				- 600	"

Roofing - See costs under different kinds of roofing.

FLUES.

The standard flue for District 5 is illustrated fully in Details No. 6-A and 6-B.

The completeness of the drawings makes the writing of descriptive matter unnecessary.

Since the cost of the material varies with location, nothing definite can be given in this connection. The figures given below may serve as a guide.

PRICE LIST - SOCKET JOINTS

Diameter	Pipe per Joint	T's 24" Long	T's 12" Long	Bottom Pipe	Starting Plate
6	.36	.75	.60	.75	.30
8	.54	1.10	.85	1.10	.36

Galvanized iron pipe will cost about -

6 Inch - - $ .20 per foot
8 " - - .25 " "

FIREPLACES.

Fireplaces being a part of the building must be charged as an item of the construction cost of the building. This will prohibit the construction of fireplaces in most dwelling houses since the statutory limitation on the cost of building will provide for bare necessities only.

The need for Improvement money for actual necessities will, as a general thing, prohibit the approval of projects like fireplaces which partake of the nature of luxuries. However, if an officer elects to construct a fireplace in Forest Service quarters from his own funds and with the full understanding that the Service assumes no responsibility of refunding the cost of the fireplace in case the officer is transferred, there is no objection to his doing so. The following specifications and accompanying diagram describe a fireplace which will heat and draw satisfactorily.

Width of opening at face 44"; height of opening at side 36"; height at center of arch, 38"; depth of fireplace (front to back), 20"; width of back wall, 28"; height of vertical portion of back wall, 18"; width of head, 39"; depth of throat, 5"; dimensions of chimney flue (at top of choker), 14" x 16"; flare of flue, 1" in 5'; drop of fireplace floor at back, 1"; an ash chute may be provided through base and out the back of the fireplace,-if used its width should be an opening 4 inches square.

Detailed dimensions can be changed to suit, so long as there are observed the principles which govern the two essential objects of fireplace construction, namely, maximum draft and maximum heat reflection into the room to be heated. These may be summarized into construction rules, as follows:

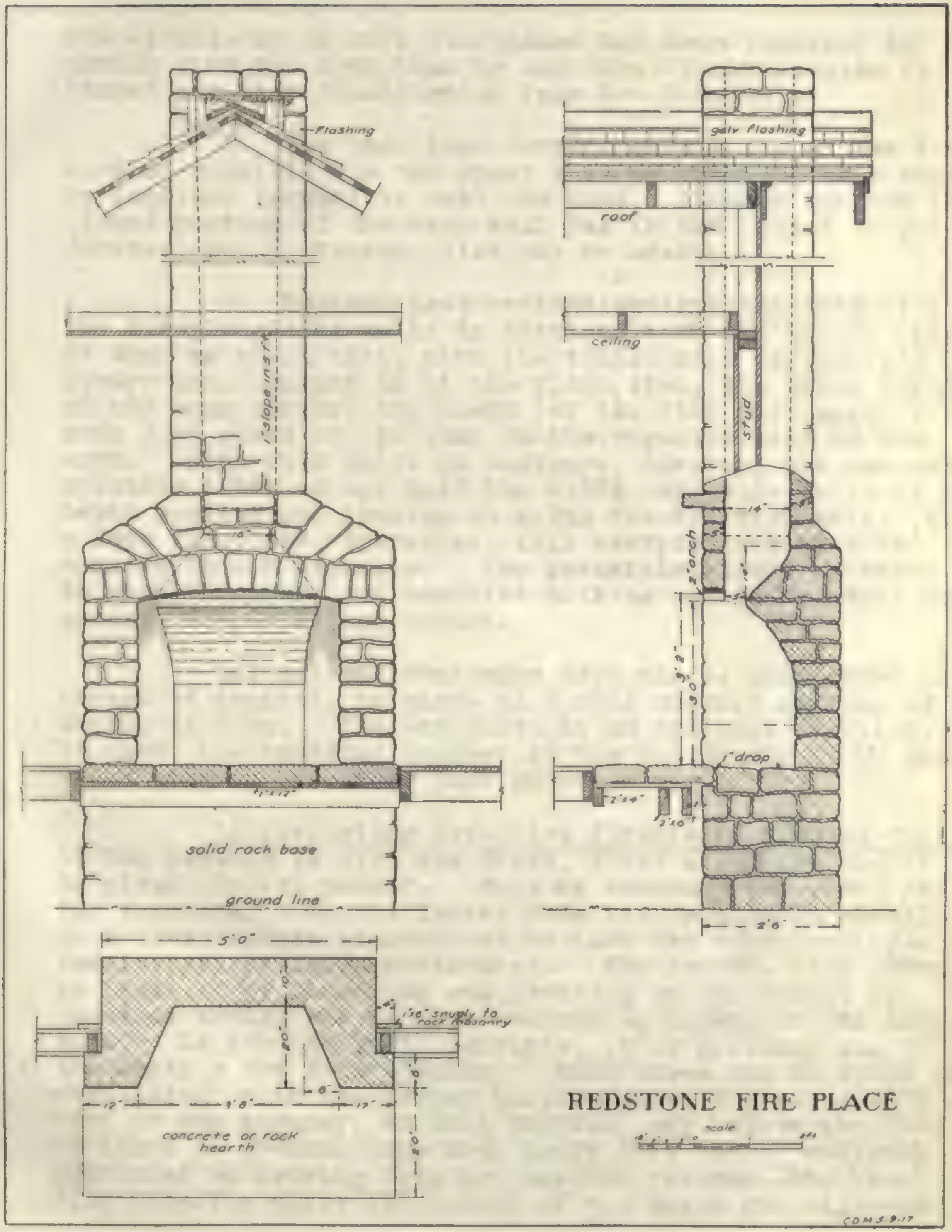
A. Rules for Securing Good Draft.

1. The throat must extend across the full width of the fireplace, and its depth (front to back) should be approximately one-third the depth of the fireplace at the floor line.

2. The chimney flue above the throat should have a cross section area about 10% greater than that of the throat, and should increase upward at the rate of about 1" in 5' for ordinary conditions, This flare in the flue, which commonly neglected, is essential to perfect draft.

B. Rules to Secure Efficient Heat Reflections.

1. The fireplace must not be too deep (front to back). A depth equal to one-quarter the front width may be called shallow, three-eighths moderate, one-half deep, over one-half very deep. The depth should not ordinarily be greater than one-half the width,- in most cases less.



REDSTONE FIRE PLACE

The efficiency of more fireplaces has been impaired by making them too deep than by any other fault outside of throat and flue construction (see No. 3 below).

2. The head (and throat) should lie as far forward as possible and the upper half of the back wall should be inclined forward to meet the head. A curve for the inclined portion of the back wall (as in the Cuts) is preferable, but a straight line may be used.

3. Maximum heat reflection into the room from the fireplace side walls is obtained when the latter lie at such an angle that, with the tongue of a carpenter's square laid against it at the floor line, the elbow being at the back corner, the blade (or its line prolonged) will pass just ahead of the jamb on the opposite side of the arch. With side walls so designed, however, the maximum possible depth is one-half the width, the side walls at this depth meeting and leaving no width for the back wall. With a deep fireplace, therefore, full carrying out of this measure is not feasible. The principle should be borne in mind, however, and complied with as nearly as other necessary considerations permit.

Galvanized iron smoke pipe can be used above the throat if desired, in place of a full masonry chimney at a saving in cost. The ash chute is an optional addition. If used, the emptying chamber at the bottom should be provided with an iron door (not shown in the Cut).

In correcting defective fireplaces already built, if the trouble is with the draft, first attention should be given to the throat. This is commonly too wide, and too far back. In the latter case its opening is usually on a considerable slant so as to face the fireplace opening instead of being horizontal. The trouble will often be remedied by narrowing and leveling up the throat by means of adding one or more courses or bricks at its back edge. If trouble still persists, it is probably due to too small a top flue opening. Most cases can be cured by rebuilding, with the proper inside flare, the top 4 to 6 feet of the chimney, or that portion, say, above the roof. If there is trouble with back draft this can be entirely prevented by driving iron projections through into the flue interior after the manner of the Maxim gun silencer.

Remediable causes of inefficient heat reflection are chiefly confined to too great depth of fireplace, or side walls too nearly perpendicular to the back wall. Whether alteration of these points in accordance with the rules above given is feasible must be decided on the conditions of each individual case.

WALL PAPER AND PAPER HANGING.

WALL PAPER.

Wall paper adaptable to Service needs may be classified as follows:

1. Blanks
2. Light embossed
3. Heavy "
4. Light pressed
5. Heavy "

Heavy embossed or heavy pressed paper is most appropriate for Service use.

The standard roll of wall paper is 18 inches wide and 8 yards long, and contains 4 square yards. Standard wall papers are put up, however, in double rolls. In ordering, always specify the number of single rolls needed.

BORDERS.

A single roll of two strip border contains 48 running feet or 16 yards of border.

A single roll of the strip border contains 24 running feet or 8 yards of border.

QUANTITY OF PAPER.

To determine the number of rolls of paper required to cover a given room, divide by 30 the number of square feet in the room minus 20 square feet for each door and window of average size. Make no allowance for small openings. This will give a fairly approximate estimate of the number of single rolls of common wall paper required. This makes allowance for trimming and matching.

For example, suppose it is desired to find the number of single rolls of paper needed for a room 12 feet wide, 15 feet long, with wall 10 feet high; also the number of rolls of border required. The distance around the room is 54 feet.

10 x 54 = 540 Sq.ft. wall surface
15 x 12 = 180 " " ceiling surface
540 +180 = 720 " " total

Suppose there are two doors and three windows of ordinary size in the room.

20 x 5 = 100 Sq. ft. of opening surface to deduct
720 ÷100= 620 " " to paper
620 ÷ 30= 20-2/3 rolls or 21 rolls of paper

QUANTITY OF BORDER NEEDED.

Since the distance around the room is 54 feet or 18 yards and a two strip roll of border contains 16 yards, 1-1/8 rolls of border will be required.

LINING.

Use ordinary unbleached muslin of medium weight 1 yard wide. There will be needed as many running yards as there are square yards of surface to be papered.

TACKS.

Order 4 oz. cut tacks. One pound of tacks will tack about 6 square yards of lining. Tack lining at 1 inch intervals along edge and scatter, tack it throughout.

PASTE.

Mix flour and cold water into a batter just thin enough to run freely. Have on hand a large quantity of boiling water. Pour the hot water into the batter, slowly mixing it in thoroughly as the water is poured. The hot water cooks the paste. When well cooked the paste will be translucent. Strain it and add about one ounce of alum to each gallon of paste. The alum will prevent the paste from becoming sour.

To apply paste have paper lying on a flat surface and spread paste evenly on it with a broad flat brush. Do not spread it too thick. One gallon of paste will hang about 9 rolls of ordinary paper.

LABOR COSTS.

The time of all work varies according to the particular job. The following data are approximate:

A skilled paper hanger will paste and hang -

To walls - about 1¼ rolls of paper per hour including border
To ceiling - about 1 roll of paper per hour

For fastening lining on new walls allow 3/4 hour per roll of paper to be placed.

For walls of two heights, as in case of rooms with plate rail, the cost is increased at 15%.

BUILDER'S HARDWARE

HARDWARE FOR DOORS.

The items listed below are of substantial design. Elaborate designs have been avoided. In placing orders for builder's hardware, use this list as a guide. All numbers quoted are those of the Pacific Hardware and Steel Company.

Hinges	Thickness	Size of Hinges	Description
Dwelling door	1½	3½"	Full surface #162 A.C.Butts
	1¼	3	" " " " "
	1-1/8	2½	" " " " "

HARDWARE FOR DOORS (Continued)

Hinges	Thickness	Size of Hinge	Description
Rough door	1½	3" x 3"	Bright steel loose pin butts
	1¼	2½" x 2½"	" " " " "
	1-1/8	2" x 2"	" " " " "
Cupboard door	7/8	1½" x ½"	Half surface #1474 D2 SC, fast joint
	3/4	1½" x 1½"	" " " " " "
Outside casement	1½	3" x 3"	Solid galvanized brass rim butt #1319 SC.
Barn doors		6"	Strap or T hinge
		8"	" " "
		10"	Knoxall #97 brass door ro #50 track. Specify fe of track desired.
Screen door		3"	Single action butts
		3"	Double " "
		3"	1912-J. S.C.

Locks	Description
Lock Matrice (inside set)	#243¼ A.C.
" " knob latch outside	#507 - - #243¼ A.C.
Rim knob lock	#8052 - #9241
Barn door latches	#126-J
Elbow catch	#12600 A.C.
Cupboard door catch	#4800 A.C.
" " turns	#8830 A.C.
Screen door catches	#448 A.C.
Door bolts, light	#1078½ S.C. 2"-3"-4"-5"
" " , heavy	#1084¼ S.C. 2"-3"-4"-5"
Spring bolt	#634 S.C. 2"-2½"-4"

HARDWARE FOR DOORS (Continued)

Hasps.	Description
Hinge hasp	#912 S.C. Galv. 6"
"	" " " 8"
Hasps and staples	#950 6"
	" 8"
Staples	#10 2½"-3"-3½"-4"
Hooks and staples	#200 4"-5"-6"

Miscellaneous Door Fixtures.

Door spring	#106
" "	Star 9" S.C.
Bolt spring	#634 2"-2½"-4"
Door stops	#111
" pulls	#101 A.C.
Drawer pulls	#672 A.C.

HARDWARE FOR WINDOWS.

Common Windows

Sash lifts	#4872 A.C. - - #824 A.C.
" locks	#708 A.C.
Spring bolts, length 3/4"	#200 J.L.
Window screen hinges	# 5 Davis

Transoms

Sash centers, size 2¼" x 1"	#44-J
Transom chains, length 12", size of plate 1-5/16x1-5/16	4 A.C.

HARDWARE FOR WINDOWS.

Casements.	Size	Description
Casement hinges	3" x 3"	Solid galv. brass rim butt #1319-G
" catches, single		#5402 A.C.
" " double		#5400½ A.C.

MISCELLANEOUS HARDWARE

Drawer pulls		#472 A.C.
Wardrobe hooks		#184 J
Wire closet hooks		# 92 J
Shelf brackets	3" x 4"	# 88 J
	5" x 6"	
	7" x 9"	
	10" x 12"	

30-gauge galvanized iron flashing 5" wide.

CONSTRUCTION

CARPENTER WORK.

The designs for buildings included in this Manual cover the field of buildings generally. From time to time, however, to meet special needs, small buildings, the plans and estimates for which are not included in this Manual, will be constructed. Maintenance of buildings already constructed now and then will also require carpenter work of various kinds. The following chapter is written with a view of securing better construction and a higher grade of maintenance work by setting forth certain standards of construction and by giving ideas of how to do certain things which, to the unexperienced man, are more or less puzzling. Unless previous authority is secured, the specifications with respect to the dimensions of materials for different purposes and the general type of construction shall apply to all common miscellaneous construction and repair work.

If the builder is unexperienced, before starting actual work he is urged to provide himself with a measuring stick 10 feet in length divided into feet and inches. He should designate the respective marks with bold figures. The stick may be 1 inch square or of any other convenient dimensions. Use the stick for making all measurements of more than 4 feet. To do so will obviate the many mistakes frequently made by a man attempting to use the carpenter's square to lay long lengths out correctly.

FRAMING.

The subject of framing taken in its broadest sense includes about all of the structural field. By one of the most common uses the term "frame" implies the cutting and joining together of the heavy or supporting members of a building,- spoken of in every day language as the frame.

The whole stability and success of a house depends upon the strength and proper arrangement of the timbers of the frame. To write a volume on the subject is not the purpose of this chapter; only the most important features of framing will be touched upon.

FRAME BUILDING FROM FOUNDATION TO ROOF.

FOUNDATION.

For the foundation of a building a solid wall of concrete or a wall of rocks laid in mortar is without question best. (Refer to pages 9 and 10 of the Concrete Section of the Manual). Concrete is very expensive under conditions influencing Forest Service building. Statutory limitations of building costs in the majority of cases prohibits use of concrete or masonry walls as foundations. The next best is then the only choice. Cut No. 1 illustrates acceptable types of foundations.

A FEW DON'TS.

1. Never place sills in direct contact with the ground. In buildings without floors, raise the sills off the ground by foundation blocks of appropriate height and fill space between foundation blocks with a dry wall of stones.

2. Never use wood blocks for footing of underpinning. If appropriate rocks are not available, it will pay to haul them from some distant point or to provide footings of concrete.

3. Never place foundations of any kind upon loose or shifting earth. The integrity of a building depends upon the foundation. If solid earth to support the foundation of a building cannot be found, refer the case to the District Forester for advice before going ahead with the construction of a permanent building.

SILLS.

Smaller satisfactory 4" x 6" sills of cedar, redwood or Douglas fir should be used in buildings having floor dimensions over 6 feet on each side. If timber of these species is not obtainable, the use of pine is permissible as a last resort. Never use white or red fir for sills. Large buildings, of course, require heavier sills. Since plans for large buildings will be prepared by the District Forester, space will not be given here to the discussion of construction of buildings of this type. If laid on concrete or masonry wall foundations, box sills are thoroughly satisfactory but sills of this type are not acceptable if supported by posts or foundation blocks. Solid sills are adaptable to all conditions regardless of the kind of foundation. They will, therefore, be the standard for the District.

SQUARING THE BUILDING.

After placing the sills it is necessary to be sure that they are square. Squaring in small building construction is done by the 3 - 4 - 5 method. Measure from the inside corner of a side sill along the inside edge 3 feet and mark. Measure from the same corner along the inside edge of the end sill 4 feet and mark. Now place your measuring stick from one mark to the other. The distance should be 5 feet. If it is more or less than 5 feet, the foundation is not square. Shift the position of the sill until the measurement is exactly 5 feet. Check up the opposite corner in the same manner. After the plates are in place and before the rafters are raised, square the plates as described above. Use the figures 6 - 8 - 10 or 12 - 16 - 20 to square large buildings.

FLOOR JOISTS.

As a general rule joists for spans longer than 4 feet should be of sticks not smaller than 2" x 6". Joists should be free from all knots larger than 1 inch in diameter and other defects which would materially weaken the sticks. Fig. No. 2, Cut No. B.M.-6, illustrates the proper arrangement of joists on sills.

STUDDING, PLATES AND CEILING JOISTS.

Figs. No. 3 and 4, Cut No. B.M.-6 may be taken as a typical example of standard construction from sill to rafters of all ordinary small Forest Service houses not included in the standard plans.

STANDARD DIMENSIONS AND DISTANCES
ON
CENTERS OF STUDDING, PLATES & CEILING JOISTS

	Size	Distance on Center
Studding, Common	2" x 4"	2 Feet
" Corner	2" x 4"	Double
" "	4" x 4"	Single
Ceiling joist (No snow)	2" x 4"	2 Feet
" "(No ceiling used)	1" x 6"	2 "
" "(Snow country)	2" x 6"	2 "
Plates	2" x 4"	Double

Studding and plates may be of any sound lumber of any species. Ceiling joists, if to support a ceiling in regions of light or no snowfall should be of 2" x 4" stuff. Where no ceiling is to be supported, ceiling joists are used only to prevent the spreading of the walls of the building. In such cases 1" x 6" sticks are appropriate. Where snowfall is heavy a large part of the snow load is deflected to the ceiling joists by a system of braces. Under these conditions, it is necessary to have joists possess great strength. Only perfectly sound straight grained sticks 2" x 6", free from all knots larger in diameter than 1 inch are suitable. Ceiling joists must always be nailed securely to the rafters. (See Cut No. B.M.-6 for methods of bracing rafters).

Where severe wind pressure or side pressure from settling snow is anticipated, the system of braces for studding of exterior walls should be followed as shown in Fig. No. 5, Cut No. B.M.-6.

Squaring of the plates should not be forgotten.

FRAME DOOR AND WINDOW OPENINGS.

The setting of the studding at door and window openings deserves more attention than is usually given it. Only good straight studding should be selected for this purpose. Although somewhat out of place in this text, it might be appropriate to add that door jambs and window frames should be carefully plumbed. Do not space the jambs or frames by using the lines of the studding as a guide. Plumb the jambs or casings carefully with a spirit level. See Cut No. B.M.-4 for details of door jambs and casings and window frames. Before ordering factory made casings, read carefully pages 11 to 14 inclusive.

RAFTERS.

In a pitch roof the following terms must be agreed upon.

Raise is the height of the head of rafter (at the ridge pole) above the level of the plates.

Run is the horizontal distance from the foot of the rafter to a plumb line hung from its top and is, therefore, in an ordinary full gable roof, equal to one-half the width of the building.

Pitch is the steepness of the roof, expressed in terms of the ratio between the rise and the width of the building (or twice the run). For example, in a building 24 feet wide, if the rise is 8 feet the roof is one-third pitch. Cut No. B.M.-7 shows inches rise per foot of run for common rafters for the fractional pitches commonly used up to full pitch; also the lengths of both common and hip and valley rafters per foot of run.

Projection of overhang, is the portion of the rafter which extends beyond the plate to protect the side of the building from drip.

The Working Line is a line on the side of the rafter parallel to the top and lower faces, and passing through the heel of the lower cut. See Cut No. B.M.-8. All length measurements for rafters must be made on this line. To try to work without this line will land you in certain trouble.

To get the length and cuts of a common rafter -

(1) Decide upon the pitch to be given the roof. In the following examples this is assumed to be 1/3. If you are not familiar with the computation of pitch from the carpenter's square, refer to Cut No. B.M.-7 and you will find that 12 inches on the tongue and 8 inches on the blade of the square will give you this pitch.

(2) You must know the width of the building. In the following example this figure is assumed to be 24 feet.

(3) Lay off the projection and mark a square line across the side of the rafter at the upper end of the projection. As a general rule for rough building the projections will be as follows:

Roof	of	1/4	pitch	18"
"	"	1/3	"	15"
"	"	1/2	"	12"
"	"	5/8	"	9"

(4) Mark off the bottom cut. In doing this remember that the rafter should have a seat as wide, or nearly as wide as the plate, or say, 4 inches. Now place the square on the rafter with the 12 inch and 8 inch marks as shown in Cut No. B.M.-7 for 1/3 pitch, on the lower edge of the rafter and the 16 inch mark on the cross line at the upper end of the projection. This will give the line of the bottom cut as in Cut No. B.M.-8, Fig. 8.

(5) Lay off the work line through the point "A" at the heal of the bottom cut. See Fig. 7, Cut No. B.M.-8.

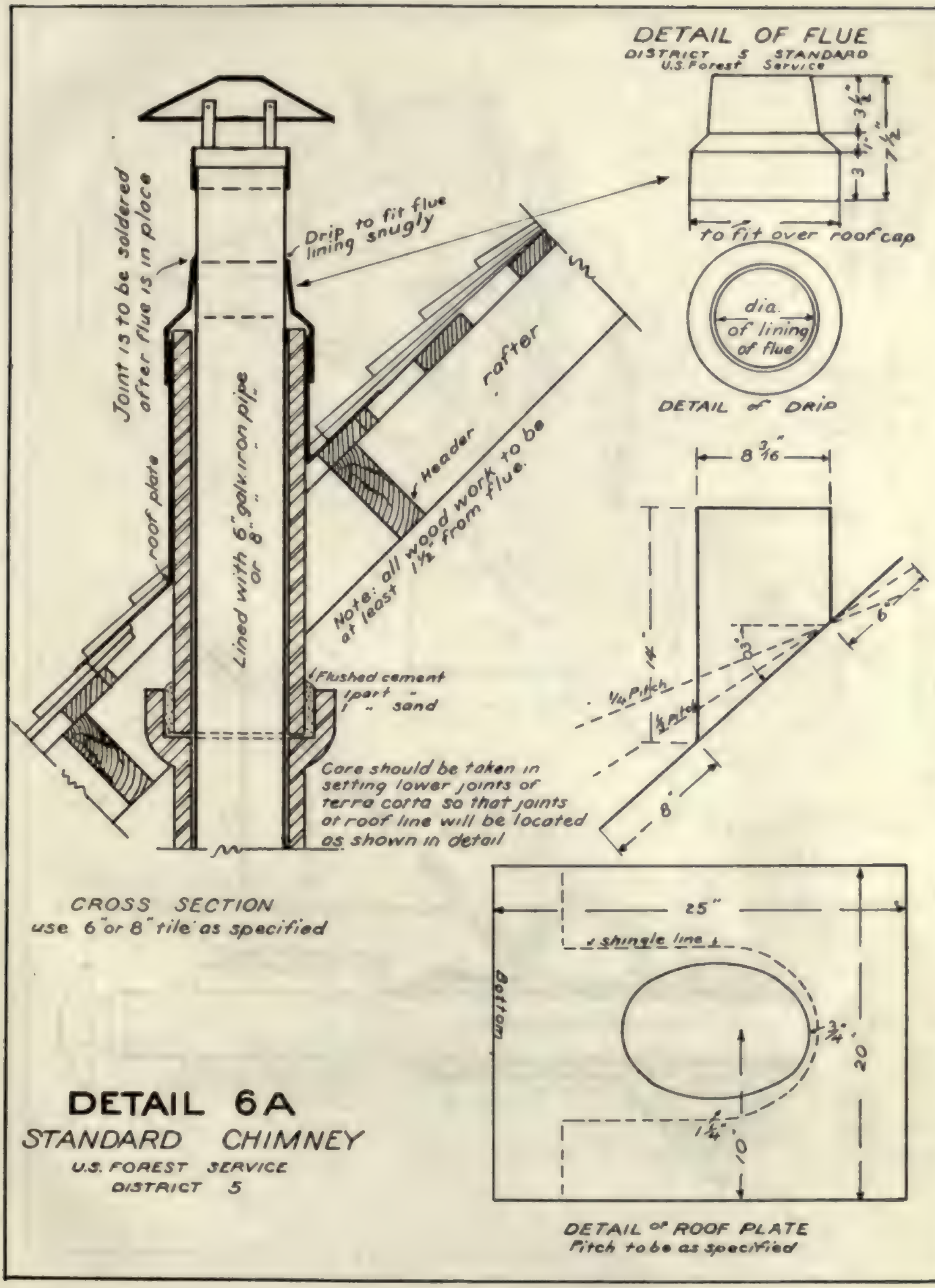
(6) To find the length of the rafter place the square on the rafter in the position shown by Fig. 7, Cut No. B.M.-8 and mark the point where it crosses the work line. Slide

the square along the working line as many times as one-half of the building in feet (or in the assumed case, 12 times) When you have done this the blade of the square will be on the upper end of the rafter, and by marking along the blade you will have the top of plumb cut of the rafter.

To get the length of hip rafters the same method is followed except that the figure 17 is used on the tongue of the square instead of the figure 12.

If you are not an adept at the use of the square, the length of the rafter may be found by simple arithmetic. We will say that we are finding the length of a common fafter for a building 24 feet wide, pitch 1/3. Simply multiply the figure shown on the line of 1/3 pitch, Cut No. B.M.-7 by 12, or the run of the rafter. Operation -- 1.20 x 12 = 14.40 feet. .40 x 12 = 4.80 inches. The .80 is a decimal of an inch which for practical purposes can be called 3/4 of an inch. As a working dimension, then, the rafter will be 14' 4-3/4" long exclusive of the projection. Very slight decimal parts of an inch may be disregarded in rafter measurements. Now suppose that you desire to find the length of the hip rafter for the building 24 feet wide, pitch 1/3. Multiply the figure shown on the margin of the square, Cut No. B.M.-7, 1.56 by half of the width of the building. 1.56 x 12 = 18.72. .72 x 12 = 8.64. Now the .64 is a decimal of an inch and for all practical purposes may be called 5/8 inches. The length of the rafter will be 18' 8-5/8".

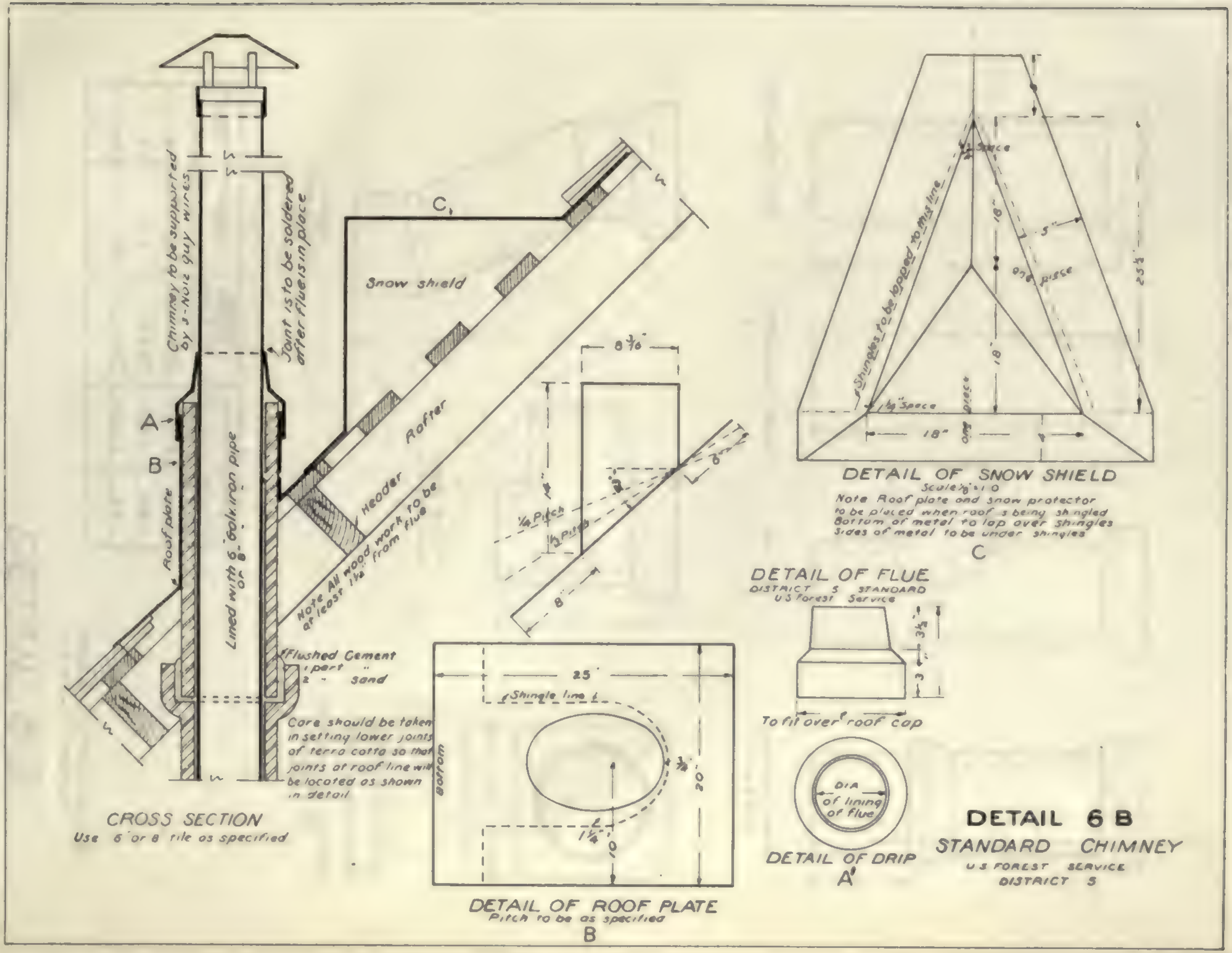
Fig. 6, Cut No. B.M.-8 illustrates the method of cutting jack rafters. The length of the jack rafter for roofs of various pitches may be found by multiplying the distance of the jacks from the corner of the building by the figures shown on the lines of respective pitches. Example -- building 1/3 pitch, rafters 2 feet apart. 2 x 1.20 = 2.40 feet. .40 x 12 = 4.80 inches. .80 is a decimal of an inch which for practical purposes can be called 3/4 of an inch, or a total length of rafter of 2' 4-3/4". The next jack will be twice as long, the third three times as long, etc.


DETAIL OF FLUE
DISTRICT 5 STANDARD
U.S. Forest Service
3½"
1"
3
7½"
to fit over roof cap
dia. of lining of flue
DETAIL of DRIP
Drip to fit flue lining snugly
Joint is to be soldered after flue is in place
roof plate
Lined with 6" galv. iron pipe or 8" "
rafter
Header
Note: all wood work to be at least 1½" from flue.
Flushed cement 1 part " 1 " sand
Care should be taken in setting lower joints of terra cotta so that joints at roof line will be located as shown in detail
CROSS SECTION
use 6" or 8" tile as specified
8 3/16"
14"
6"
63°
¼ Pitch
½ Pitch
8"
25"
shingle line
Bottom
¾"
20
1¼"
10
DETAIL of ROOF PLATE
Pitch to be as specified

DETAIL 6A

STANDARD CHIMNEY

U.S. FOREST SERVICE
DISTRICT 5



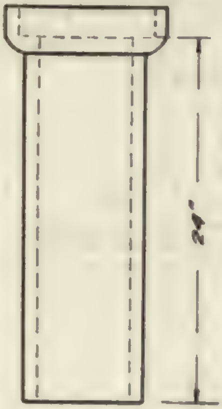
Chimney to be supported by 3-No12 guy wires
Joint is to be soldered after flue is in place
A
B
Roof plate
Lined with 6" Galv. iron pipe or 8"
Snow shield
C,
Rafter
Header
Note All wood work to be at least 1½ from flue
Flushed Cement 1 part "
2 " sand
Care should be taken in setting lower joints of terra cotta so that joints at roof line will be located as shown in detail
CROSS SECTION
Use 6" or 8" tile as specified
8 7/16"
¼ Pitch
⅓ Pitch
8"
25"
20"
Shingle line
Bottom
1¼"
10"
⅜"
DETAIL OF ROOF PLATE
Pitch to be as specified
B
Shingles to be lapped to this line
½" Space
18"
5"
25½"
one piece
DETAIL OF SNOW SHIELD
Scale ⅛"=1'0"
Note Roof plate and snow protector to be placed when roof is being shingled Bottom of metal to lap over shingles Sides of metal to be under shingles
C
DETAIL OF FLUE
DISTRICT 5 STANDARD
U.S. Forest Service
3½"
3"
To fit over roof cap
DIA of lining of flue
DETAIL OF DRIP
A'

DETAIL 6 B

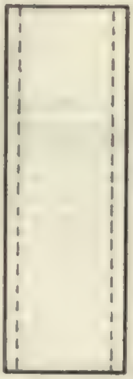
STANDARD CHIMNEY

U.S. FOREST SERVICE

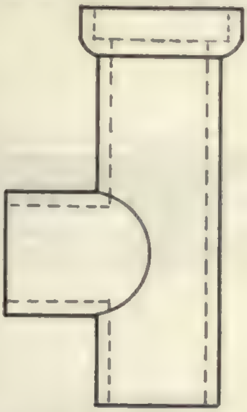
DISTRICT 5



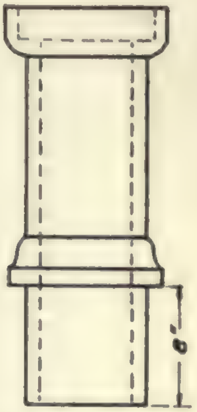
SOCKET PIPE



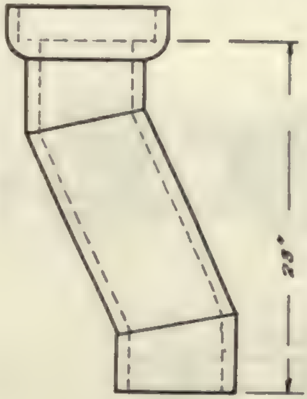
STRAIGHT JOINT



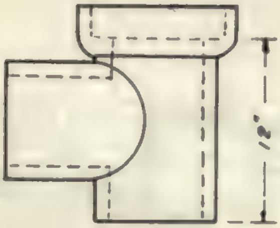
24" T



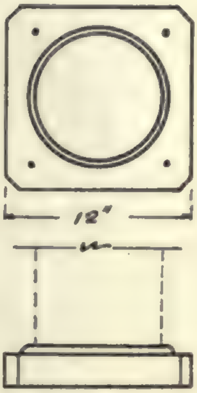
BOTTOM PIPE
6" & 8" only



OFFSET
6" and 8" only



12" T
scale ⅟16" = 1"
6" and 8" only



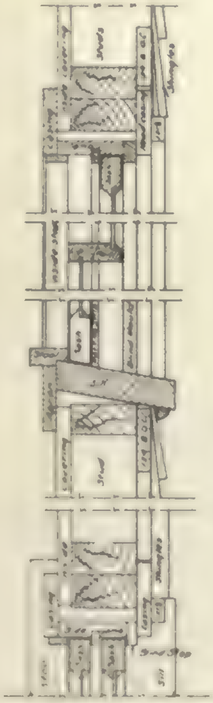
STARTING PLATE
6" and 8" only

Diameter inside	Thickness	average Weight per foot	cement per joint	sand per joint
6	1	21"	1 lb.	1.3 lb
8	1	27"	18 "	28 "
10	1¼	35"	28 "	34 "

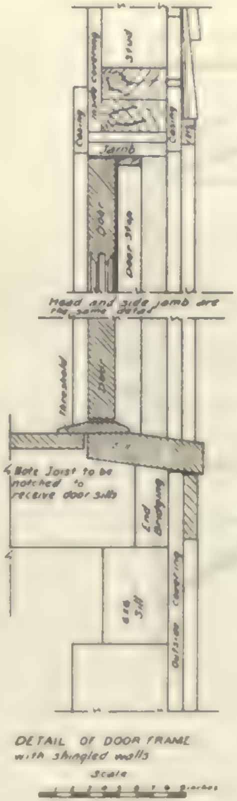
TERRA COTTA FLUES
U.S. Forest Service

DETAIL 6.C.

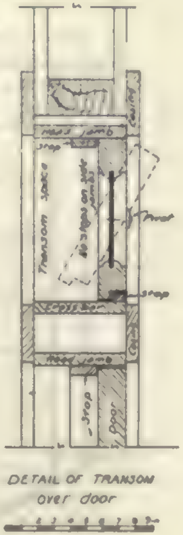
C.O.M. 1-8-17.



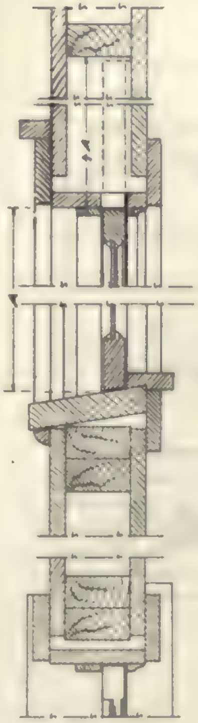
DETAIL OF WINDOW FRAME
with shingled wall



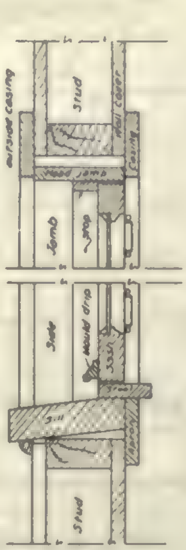
DETAIL OF DOOR FRAME
with shingled walls



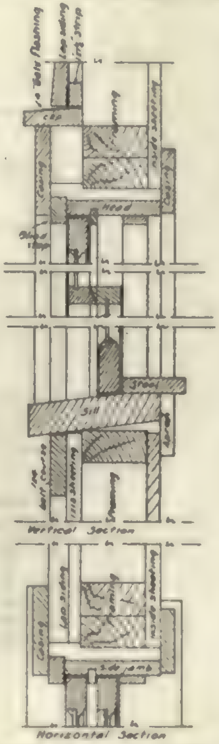
DETAIL OF TRANSOM
over door



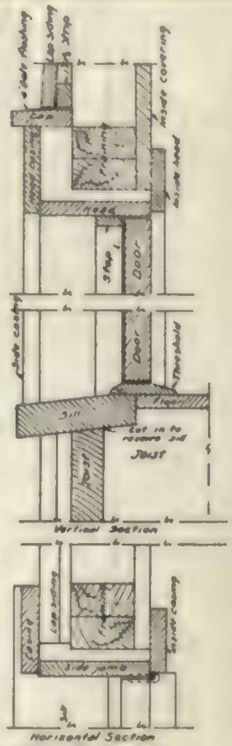
SINGLE SASH FRAME



DETAIL OF
CASEMENT WINDOW
To open in Place stops
same as in doors



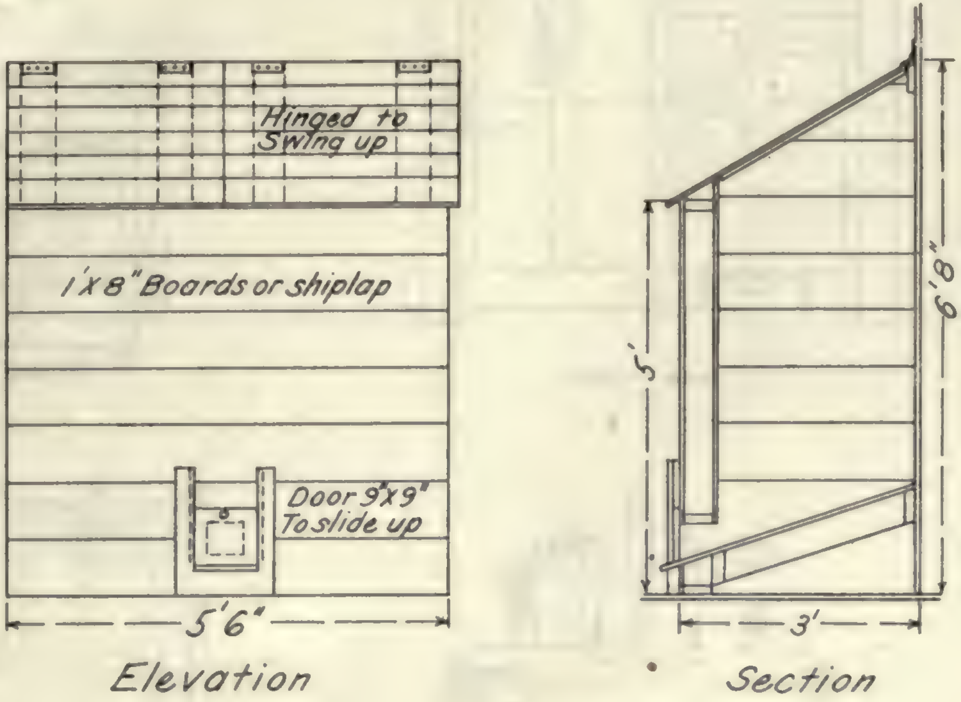
DETAIL OF WINDOW FRAME



DETAIL OF OUTSIDE
DOOR FRAME

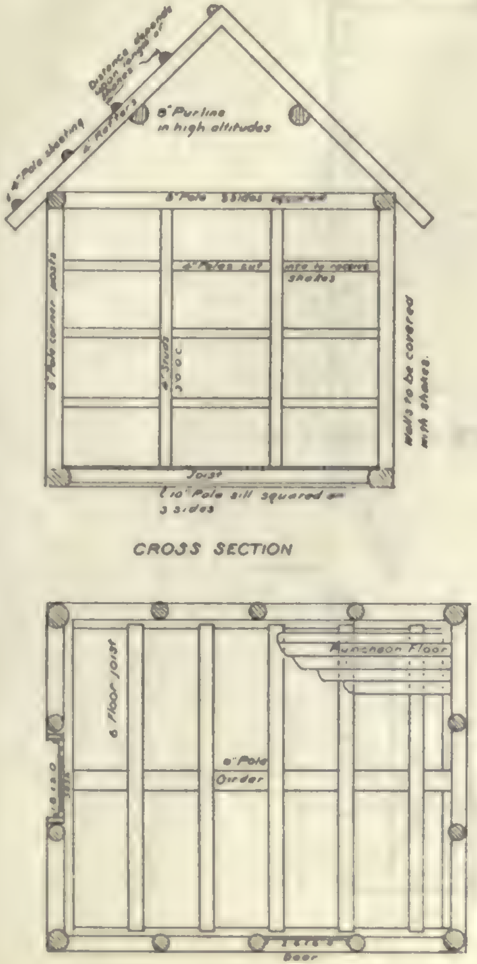
Note Sill and Jambs of both doors and windows to be made narrower if rustic or boards and battens are used for outside cover

DETAIL NO.6 D



Detail of Grain Bin

DETAIL NO. 6 E
GRAIN BIN
U.S. FOREST SERVICE
DISTRICT 5

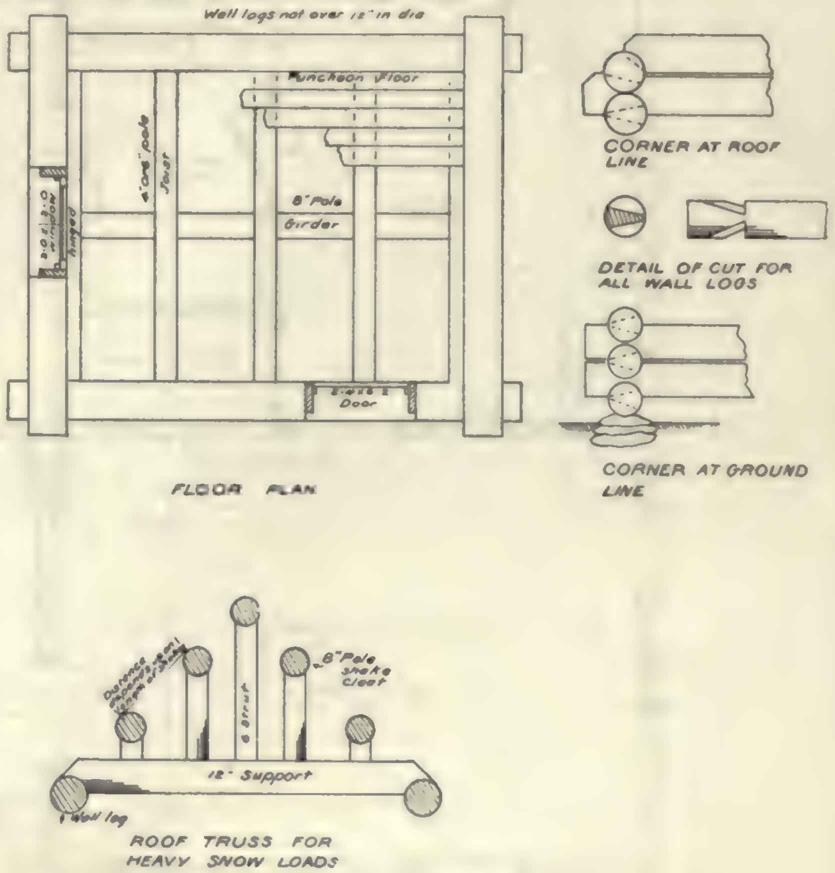

Distance depends upon length of shakes
4" Pole sheeting
4" Rafters
8" Purline in high altitudes
8" Pole 3 sides squared
4" Poles cut into by reserve shakes
8" Pole corner posts
4" Studs 30" O.C.
Walls to be covered with shakes.
Joist
10" Pole sill squared on 3 sides
6 Floor joist
8" Pole Girder
Puncheon Floor
Door

CROSS SECTION

FLOOR PLAN

DETAIL OF POLE CABIN

DETAIL 6 G



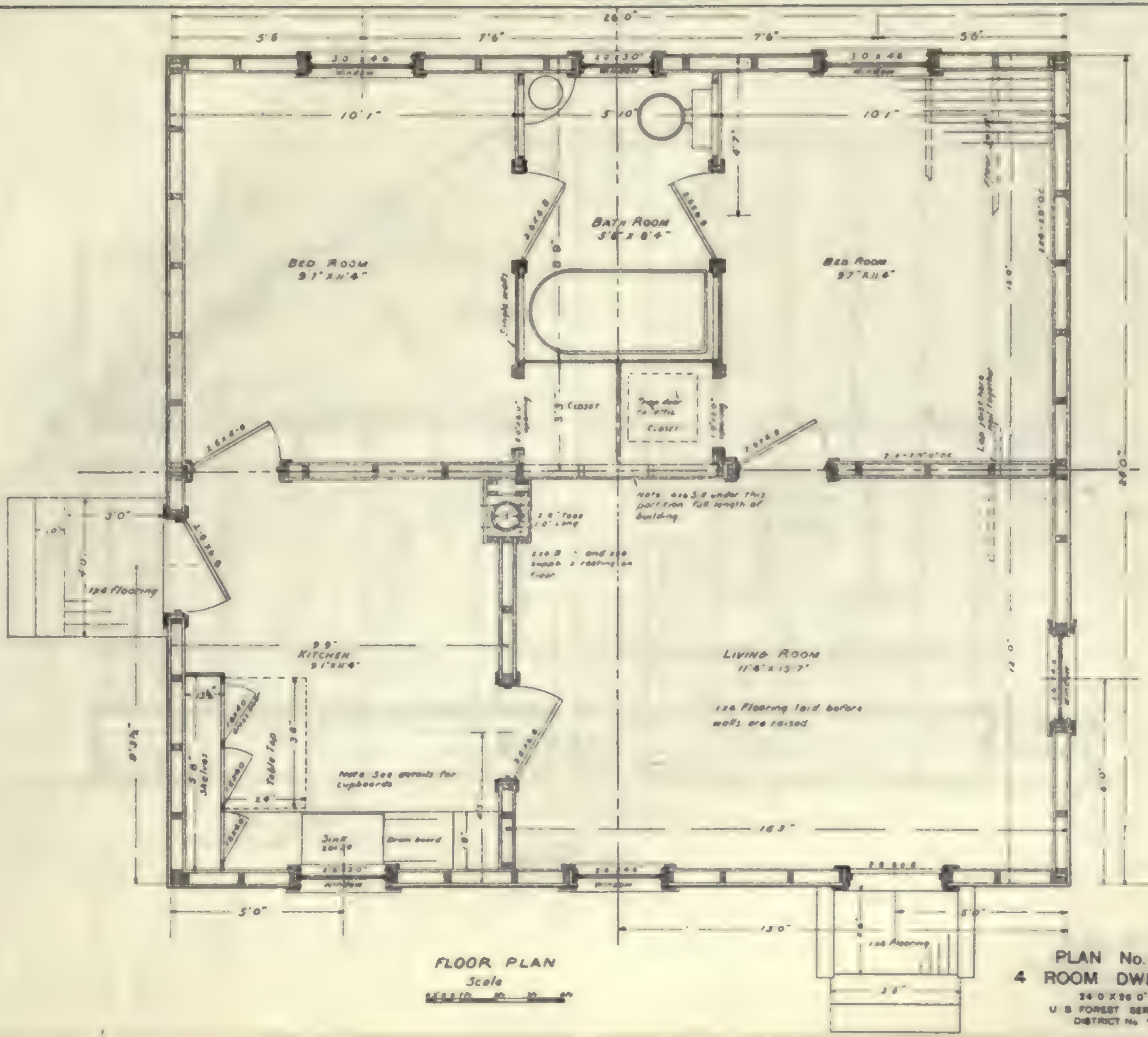
FLOOR PLAN

ROOF TRUSS FOR HEAVY SNOW LOADS

DETAIL OF LOG CABIN

DETAIL 6 F

①



FLOOR PLAN

Scale

PLAN No. 1A

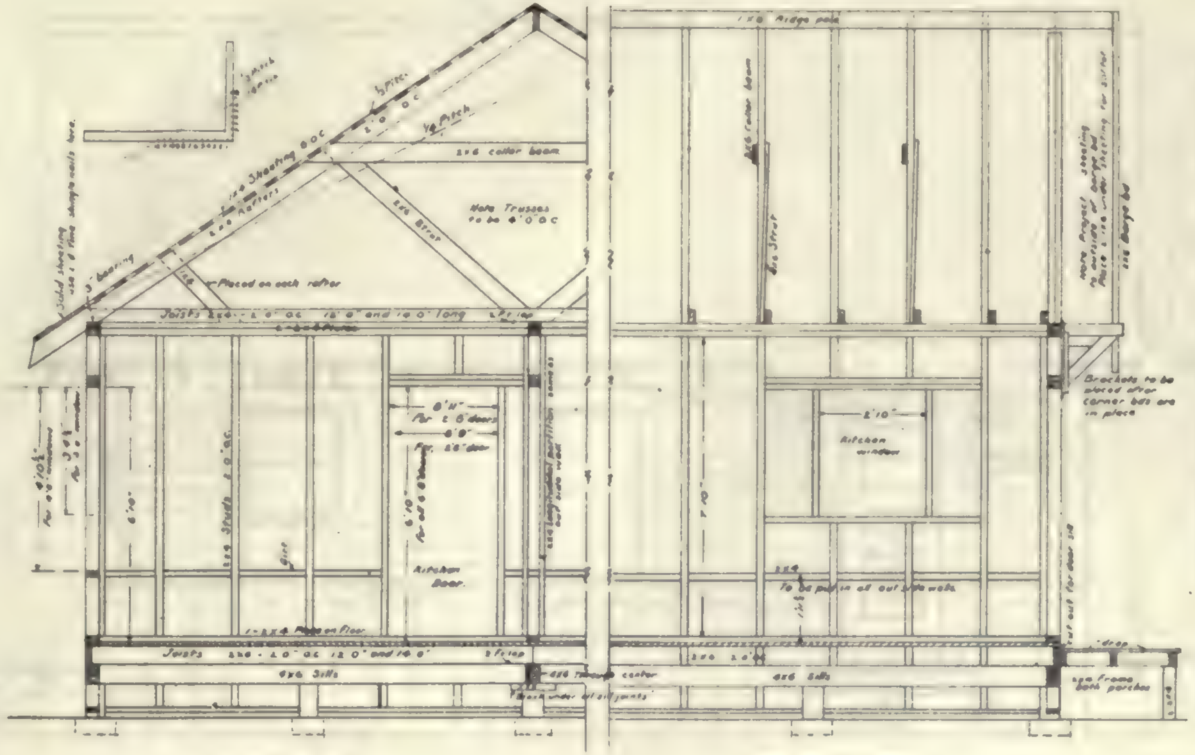
4 ROOM DWELLING

24'0" X 26'0"

U S FOREST SERVICE

DISTRICT No 5

②



CROSS SECTION

SHOWING METHOD OF FRAMING

LONGITUDINAL SECTION

Scale

PLAN No. 1A

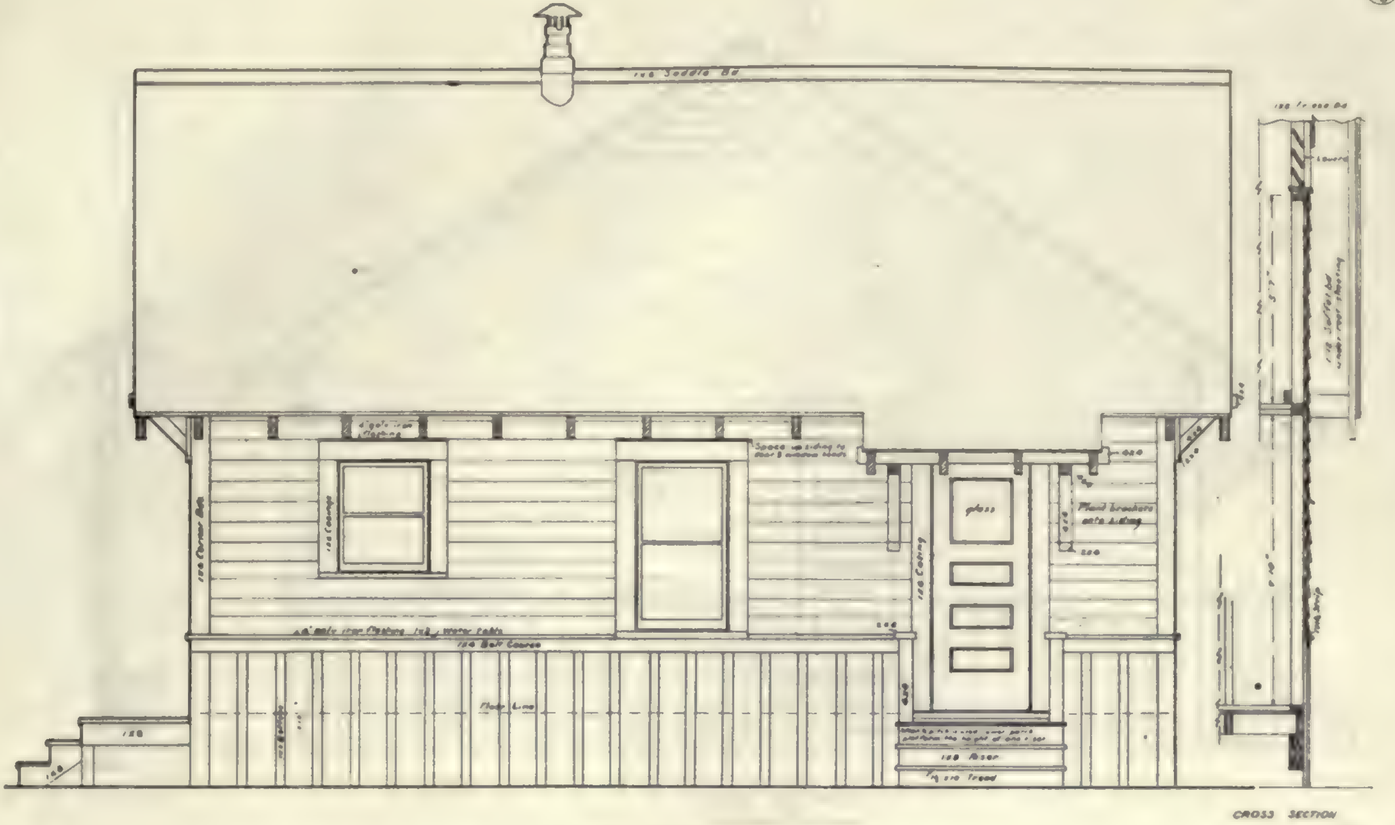
4 ROOM DWELLING

24 0 X 26 0

U. S. FOREST SERVICE

DISTRICT No. 6

③

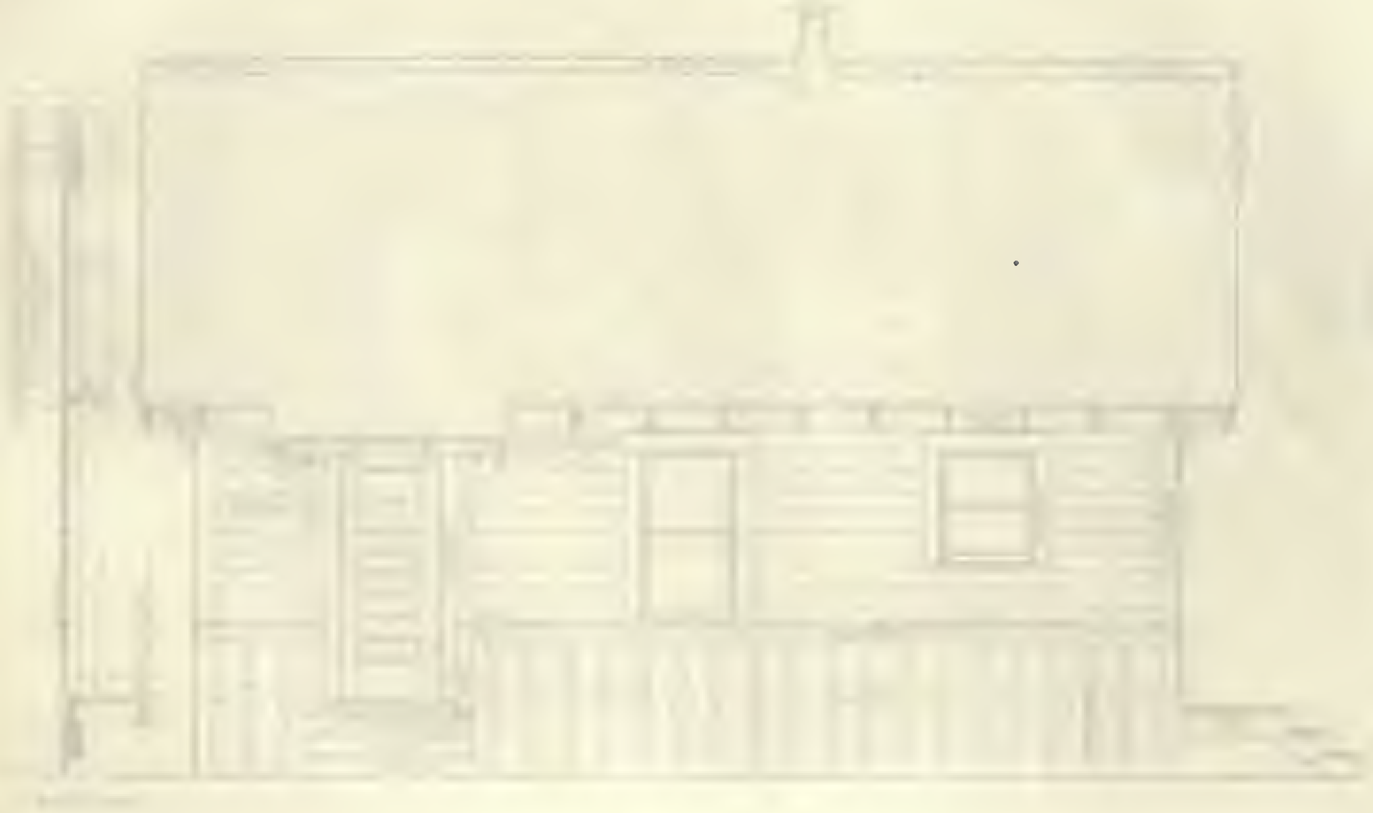

1x6 Saddle Bd
glass
1x6 Casing
1x6 Casings
1x6 Corner Bds
1x6 Belt Course
Floor Line
Space up siding to door & window heads
Plant brackets onto siding
1x8 Riser
1x12 Soffit Bd under roof sheathing

CROSS SECTION

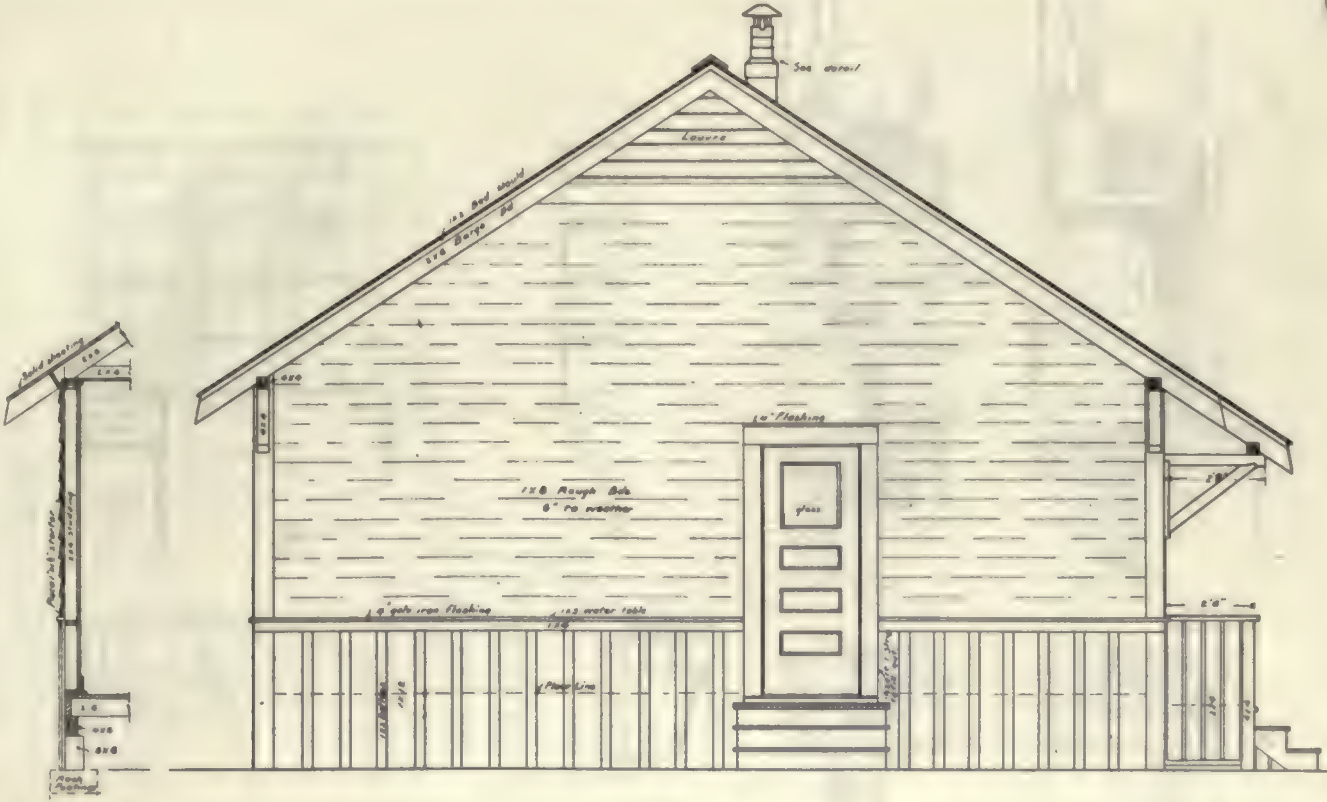
FRONT ELEVATION

Scale

PLAN No. 1A
4 ROOM DWELLING
24'0" X 26'0"
U. S. FOREST SERVICE
DISTRICT No. 6

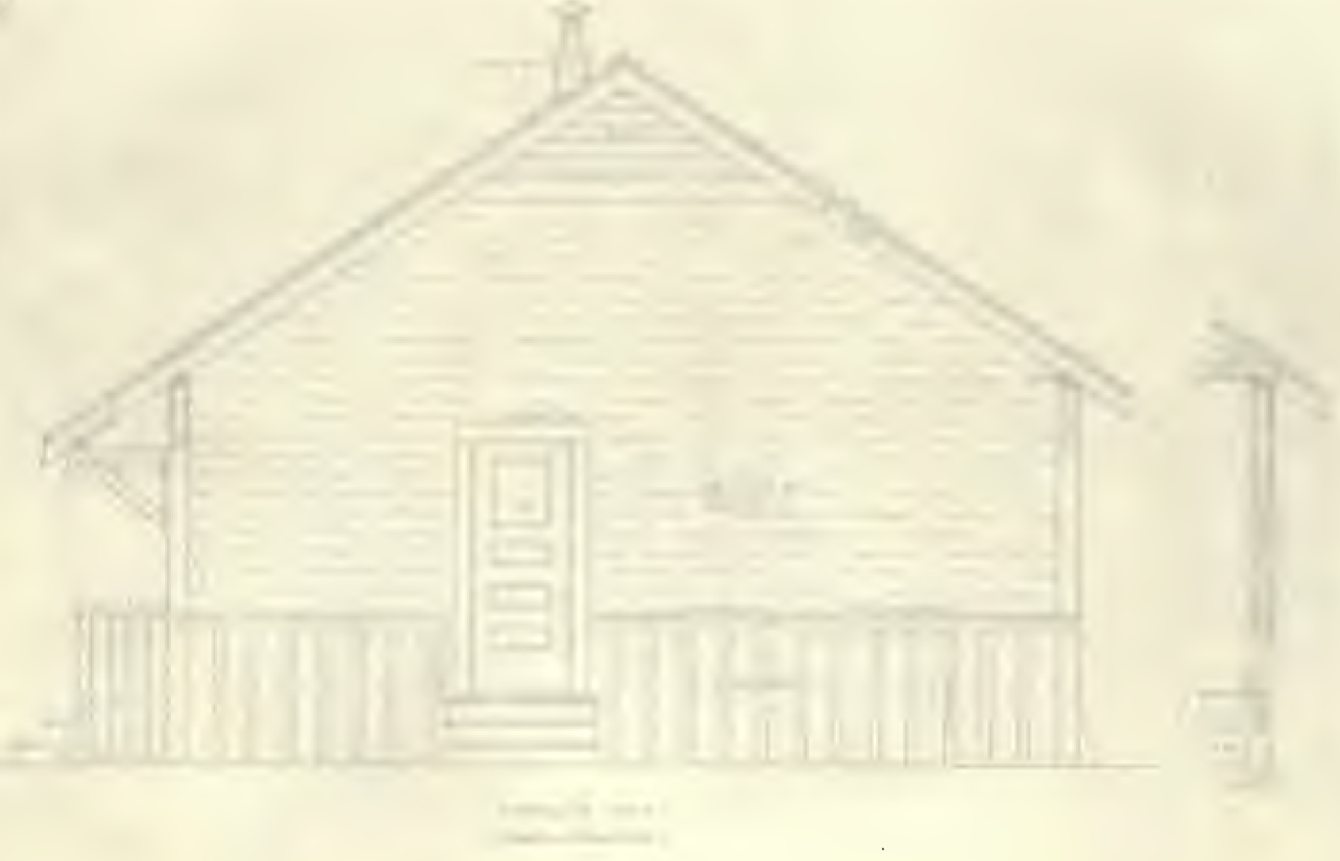


④

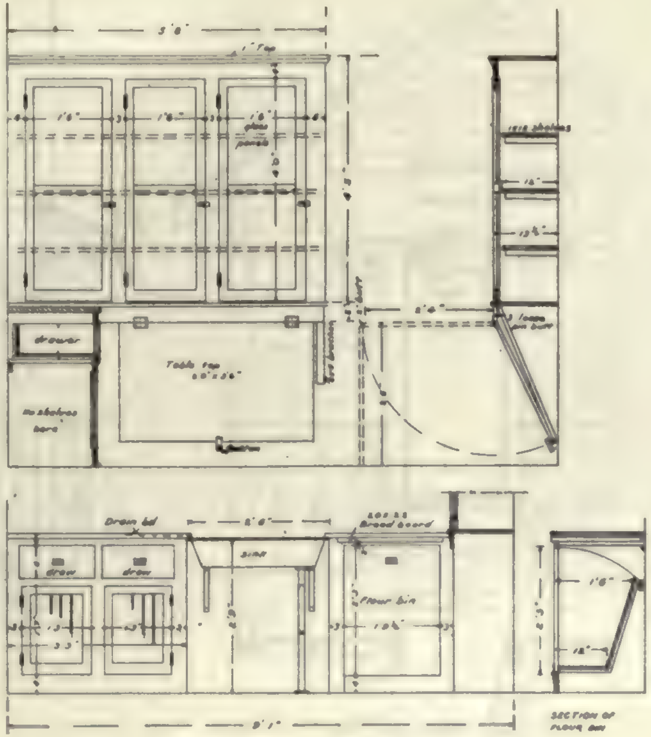


END ELEVATION
Scale

PLAN No. 1A
4 ROOM DWELLING
24'0" X 26'0"
U. S. FOREST SERVICE
DISTRICT No. 5

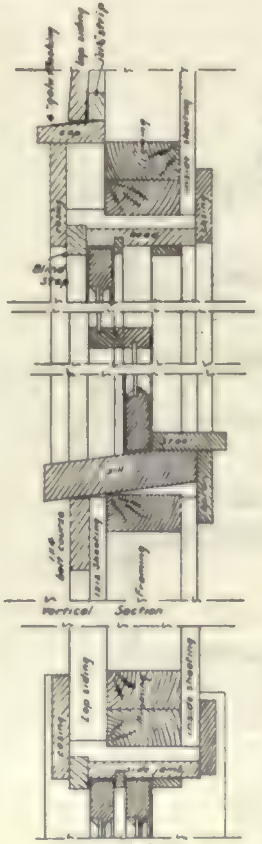


⑤

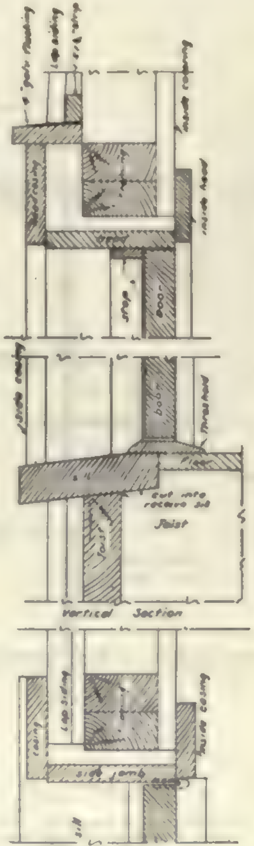


DETAIL OF SINK AND CUPBOARD FOR KITCHEN

Scale



DETAIL OF WINDOW FRAME



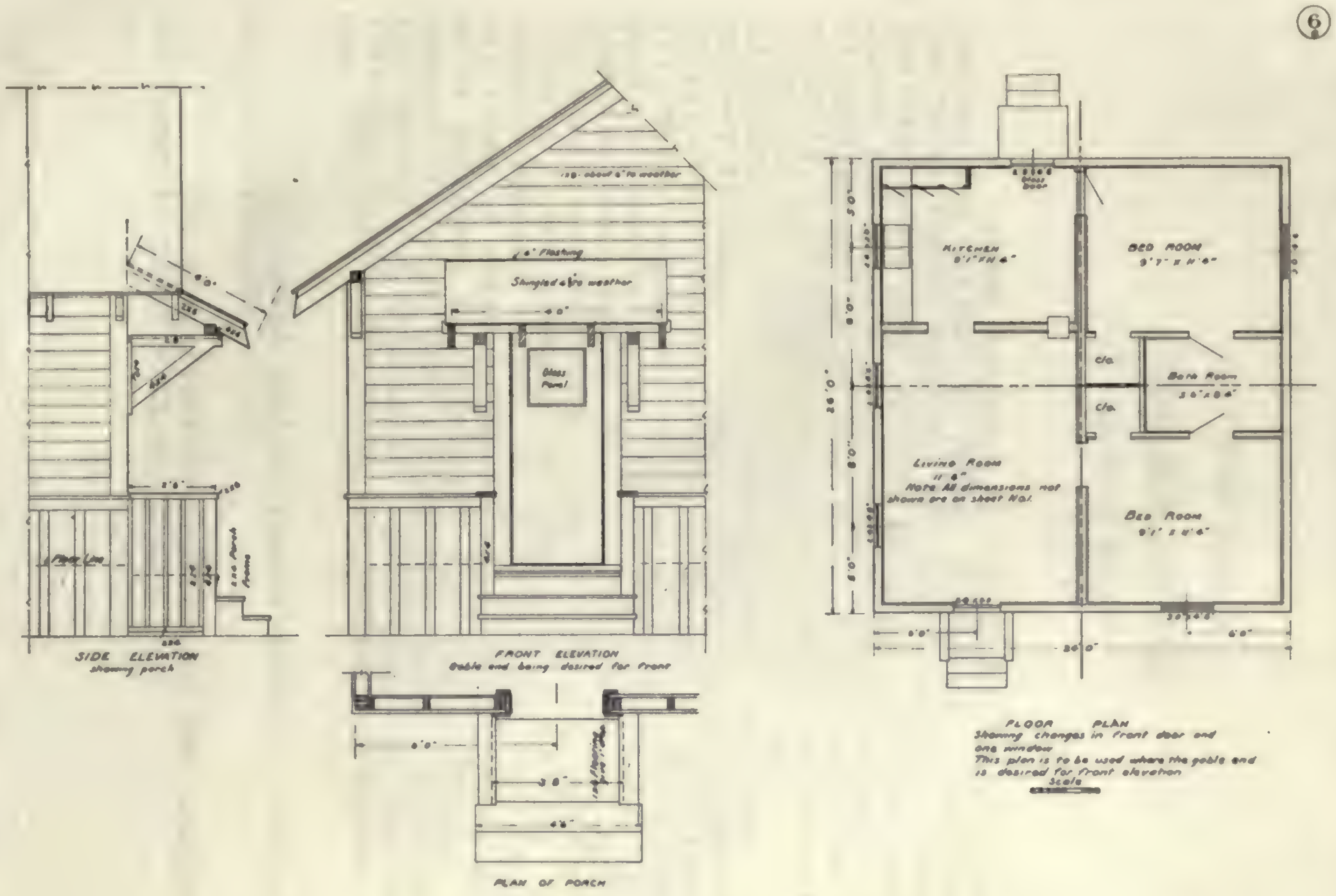
DETAIL OF OUTSIDE DOOR FRAME

Scale

Note Sill and jambs of both doors and windows to be made narrower if rustic or boards and battens are used for out side cover

PLAN No. 1A
4 ROOM DWELLING

24' 0" X 26' 0"
U. S. FOREST SERVICE
DISTRICT No. 5



FLOOR PLAN
Showing changes in front door and one window
This plan is to be used where the gable end is desired for front elevation
Scale

PLAN No. 1A
4 ROOM DWELLING
24' 0" X 26' 0"
U. S. FOREST SERVICE
DISTRICT No. 5

PLAN NO.1-A

FOUR-ROOM DWELLING

24'0" x 26'0"

Items preceded by the mark (*) are standard and are not subject to change or choice. Conditions of the local lumber markets, and the isolation of certain building sites from markets carrying a varied stock of lumber are factors which will govern selection of the type of outside and inside wall cover, trim, and sizes and kinds of nails. Elevation of the particular building site will determine the slope of roof to use and the dimensions of the roof frame material to order. All items subject to change or choice are indicated by the mark (#). To prepare a complete order list, select the items marked (#), which, under the particular circumstances, will be best adapted for use at a given building site. Add such items to those marked (*). To all items of lumber, add the specifications shown under "Grade and Species" and "Finish". For example: two pieces 4" x 6" - 16' No. 1 common, redwood, cedar, Douglas fir, or pine, rough. To all items of hardware add only such descriptive matter as is necessary to adequately describe each item. For example: 2 pounds 30d. common wire nails - 3 pounds 30d. fine galvanized wire nails. Do not show on the order list the purpose for which the hardware items are to be used.

Estimated cost of construction - labor at $4.00 per day - $200.00.

For specifications applicable for this plan, see Pages 15-23 of Plan No. 1-B.

BUILDER'S LIST OF MATERIALS

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
Sills, Floor and Ceiling Joists.					
* 3	4 x 6 - 14	Side sills and floor joists	Redwood, Cedar or D. F.	Rough	84
* 3	4 x 6 - 12	" " " " "	" " " " "	"	72
* 4	4 x 6 - 12	End Sills	" " " " "	"	96
*30	2 x 6 - 12	Joists	(No. 2 Clear D.F., 1st choice)	" sized	360
* 6	2 x 6 - 12	End bridging	(" 1 "W.F. or R.F. 2nd ")	if prac-	72
* 2	2 x 6 - 14	" "	(" 2 " Y.P., 3rd ")	ticable	28
*28	2 x 4 - 12	Ceiling joist	( )		224
* 7	1 x 4 - 16	Cross bridging floor joists	No. 1 Common, any species	Rough	38 60
* 1	6 x 6 - 20	Underpinning	Heart cedar or redwood.	"	

Note:- The item "Underpinning" includes sufficient material shown in plan. The actual amount needed will depend upon the slope of the ground of each particular building site. Make due allowance for this item in the lumber order. If split or round material is used, this item may be eliminated from the lumber list.

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
Studding, Plates, Girts, etc.					
*50	2 x 4 - 16	Studding	No. 1 Common, any species	Rough-sized if practicable	534
*27	2 x 4 - 12	Outside wall and partition plates	" " " " "		216
*10	2 x 4 - 14	" " " " "	" " " " "		94
* 6	2 x 4 - 16	Girts	" " " " "	"	64
* 8	2 x 4 - 16	Window and door trimmers	" " " " "	"	86
* 6	2 x 4 - 16	False foundation frame	" " " " "	"	64
# 8	1 x 6 - 16	Diagonal bracing for build- designed to carry snow load	" " " " "	"	64

Wall Covering (Outside) Below Water Table.
(Standard regardless of cover above water table).

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
*25	1 x 12 - 16	Sheeting for base	No. 1 Common, any species	Rough or S1S	400
*400	Lin.Ft.5/8 x 3	Battens for "	" " " " "	" " S4S	100
* 9	1 x 4 - 12	Belt Course	" 2 Clear, " "	" " "	36
* 9	1 x 3 - 12	Water table	" " " " "	" " "	27

Note:- The first two items include sufficient siding for buildings having underpinning of the height shown on plan. The actual amount needed will depend upon the slope of the building site. Make due allowance for this item in the lumber order.

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
#725	Bd.Ft. 1 x 8	Siding, 6" to weather (above water table)	"C"Grade California or No.3 Clear Oregon D.F.		725
	or				
#675	" " 6" or 8"	Rustic or drop-siding (above water table)	Same as above		675
	or				
#300	" " 1 x 4	Sheeting for shingles (above water table)	No. 2 Common, any species	Rough	300
#4500		Shingles,5" to weather (above water table)	Star A Star, Red cedar		

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
		Roof Frame and Cover, 1/4 Pitch, 2' Eave and Gable Projection (Elevation up to 2000 feet.)			
#24	2 x 4 - 16	Rafters 2' O.C.	Same as floor joists	Rough	256
# 4	2 x 4 - 18	" " " "	" " " "	"	48
# 2	1 x 6 - 16	Ridge Poles	No. 1 Common, any species	"	16
# 6	1 x 6 - 12	Collar beams	Same as floor joists	"	36
# 3	1 x 4 - 14	Rafter ties to joist near plate	No. 1 Common, any species	"	14
#480	Bd.Ft.1 x 4	Sheeting, Roof, 8" O.C. (except eaves)	" 2 " " "	"	480
#7750		Shingles, roof, 4½" to weather	Star A Star, Red cedar		
# 4	1 x 6 - 16	Saddle boards	No. 1 Common, any species	"	32
# 9	1 x12 - 16	Sheeting, 18" rafter projection	" " " " "	" or S1S	144
# 4	2 x 6 - 16	Barge Boards	" " " " "	" " S4S	72
# 4	1 x 2 - 16	" " trim	" 2 Clear " "	" " "	11
# 4	1 x 6 - 14	Frieze boards gable ends	" 1 Common, " "	" " "	28
# 3	1 x 4 - 16	Rafter frieze (between rafters)	" " " " "	" " S1S	16
# 8	1 x10 - 14	Soffit, gable projection	" " " " "	" " "	94
# 1	2 x 8 - 16	Sills for Louvre	" " " " "	" " S4S	22
# 2	1 x 8 - 16	Jambs and slats for	" " " " "	" " S1S	22

Note:- The preceding 8 items are listed rough or surfaced, etc.; if rough lumber wall cover is used, all will be rough; if rustic or drop siding wall cover is used, order surfaced as indicated. If shingle wall cover is used, ordinarily these items will be rough, but occasion may arise where preferable to surface as indicated. Substitute milled bed mould for barge trim when rustic wall cover is used, and add 4 pcs. 14 ft. long of 1" 1/4 round moulding for frieze trim.

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
#180	Bd.Ft. 1 x 8	Sheeting, 6" to weather, gable ends	No.1 Common, any species	Rough	180
	Or if rustic or drop siding wall cover is used -				
#180	Bd.Ft.	Rustic or drop siding gable ends cover	"C"Grade California, any species, or No.3 Clear Oregon D.F.		180
	Or if shingle wall cover is used -				
# 80	Bd.Ft. 1 x 4	Sheeting for shingle gable ends	No.2 Common, any species	"	80
#1100		Shingles, 5" to weather	Star A Star, Red cedar		

Roof Frame and Cover, 1/3 Pitch, 18" Eave and Gable Projection.
(Elevation - 2000 to 4000 ft.)

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
#24	2 x 8 - 18	Rafters 2' O.C.	Same as floor joists	"	432
# 4	2 x 8 - 20	" " " "	" " " "	"	96
# 2	1 x10 - 16	Ridge pole	No. 1 common, any species	"	28
#12	1 x 8 - 12	Collar beams	Same as floor joists	"	144
# 6	1 x 6 - 14	Rafter ties to joist near plate	No. 1 Common, any species	"	42
#540	Bd.Ft.1x4	Roof sheeting 8"O.C. except eaves	" 2 " " "	"	540
#8250		Shingles, roof, 4½" to weather	Star A Star, Red cedar		
# 4	1 x 6 - 16	Saddle boards	No. 1 Common, any species	"	32
# 9	1 x12 - 16	Sheeting 18" rafter projection	" " " " "	" or S1S	144
# 4	2 x 8 - 18	Barge boards	" " " " "	" " S4S	72
# 4	1 x 2 - 18	" " trim	" 2 Clear, " "	" " "	12
# 4	1 x 8 - 16	Frieze boards gable ends	" 1 Common, " "	" " "	43
# 3	1 x 8 - 16	Rafter frieze (between rafters)	" " " " "	" " S1S	32

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
# 4	1 x 6 - 16	Soffit for gable projection	No. 1 Common, any species	Rough or S1S	32
# 4	1 x 8 - 16	" " " " "	" " " " "	" " "	43
# 1	2 x 8 - 16	Sills for louvre	" " " " "	" " S4S	22
# 2	1 x 8 - 16	Jambs and slats for louvre	" " " " "	" " S1S	22

Note:- The preceding 9 items are listed rough or surfaced, etc.; if rough lumber wall cover is used, all will be rough; if rustic or drop siding wall cover is used, order surfaced as indicated. If shingle wall cover is used, ordinarily these items will be rough, but occasion may arise where preferable to surface as indicated. Substitute milled bed mould for barge trim when rustic wall cover is used, and add 4 pieces 16 ft. long of 1" 1/4 round moulding for frieze trim.

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
#250	Bd.Ft.1x8	Sheeting 6" to weather gable ends	No. 1 Common, any species	Rough	250

Or if rustic or drop siding wall cover is used-

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
#250	Bd.Ft.	Rustic or drop siding gable ends cover	"C"Grade California, any species, or No.3 Clear Oregon D.F.		250

Or if shingle wall cover is used -

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
# 96	Bd.Ft.1x4	Sheeting for shingle gable ends	No. 2 Common, any species	"	96
#1500		Shingles,5" to weather	Star A Star, Red cedar		

Outside Trim

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
* 1	2 x 4 - 16	Brackets for gable	No. 1 Common, any species	"or S4S	11
* 2	4 x 4 - 12	" " "	" " " " "	" " "	32
* 4	1 x 6 - 14	Corner boards	" " " " "	" " "	28

Note:- For rough lumber wall finish, order above three items rough; surfaced for rustic or drop siding wall cover; usually rough for shingle wall cover.

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.

Porch Material (Includes Eave Brackets)

* 2	4 x 4 x 12	Brackets and supports	No. 2 Clear, any species	Rough, or S4S	32
* 3	2 x 4 - 16	Brackets and balustrade	" 1 Common, " "	" " "	32
* 1	2 x 6 - 8	Hand Rail	" 1 " " "	" " "	8
* 3	2 x 4 - 16	Frame	" " " " "	" " "	32
*30	Bd.Ft.1 x 4	Flooring, T.&G. vertical grain	"C"Grade California, any species, or No.2 Clear Oregon D.F.		30
* 1	1½x10 - 16	Steps	No. 1 common, Pine or D.F.	"	20
* 1	1 x 8 - 16	Risers	" " " " " "	"	11
* 1	1 x12 - 12	Stringers and base	" " " " " "	"	12

Note:- Order rough if rough lumber wall cover is used or surfaced if rustic or drop siding wall cover is used. Remainder of items order as listed. Above estimates will vary according to site-see note following "Underpinning" (1st heading).

Flooring.

*780	Bd.Ft. 1 x 4	Flooring, T.&G., vertical grain	"C"Grade California, any species, or No.2 Clear Oregon D.F.		780

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
		Inside Walls and Ceiling Cover (Choice of)			
#2450	Bd.Ft. 1 x 4	T.&G.walls and ceiling cover	"C"Grade California, any species,or No.3 Clear Oregon D.F.		2450
	Or				
#123	1 x12 - 16	Wall and ceiling cover	No. 1 Common, any species	Rough or S1S	1968
#112	5/8x 3 - 16	" " " " , battens	" " " ,Redwood,cedar or pine	" " S4S	448
	Or				
#2350	Bd.Ft. 8"	Shiplap wall and ceiling cover	"C"Grade California,any species or No.3 Clear Oregon D.F.		2350
		Inside Trim.			
#350	Lin.Ft. 1"	1/4 round moulding for corners when surfaced interior cover is used.			
#350	" " 1" x 1"	strips No. 2 Clear, rough, " rough " " " "			
*11	1 x 6 - 16	Base Boards	No. 2 Clear, any species	S4S	88
* 4	1 x12 - 16	Shelves and miscellaneous use.	" " " "	"	64
		All Door and Window Frames Complete - Including Inside and Outside Casings,Stops Parting strips, Blind stops, Stools and Aprons - if made on the job.			
# 2	2 x10 - 14	Sills(if 1x8 lapped siding	No. 2 Clear, Pine or D.F.	S1S	47
# 2	2 x 8 - 14	" (" rustic or shingle siding)	" " " " " "	"	38
# 7	1 x 8 - 14	Jambs(if 1x8 lapped siding)"	" " ,Pine,R.W.or Cedar	"	66
# 7	1 x 6 - 14	" (if rustic or shingle siding	" " " " " " " "	"	49

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
# 8	1 x 6 - 14	Casings (outside)	No.2 Clear, Pine, R.W. or Cedar	S4S	56
# 9	1 x 4 - 14	" , stools & aprons	" " " " " " " "	"	42
#10	1 x 4 - 18	" , inside doors and openings	" " " " " " " "	"	60
# 5	1 x 4 - 14	Jambs, inside doors	" " " " " " " "	"	24
# 4	1 x 6 - 14	Jambs	" " " " " " " "	S1S	28
# 2	1 x 4 - 16	Casings	" " " " " " " "	S4S	11
# 6	1 x 2 - 12	Blind stops	" " " " " " " "	S4S	12
# 6	½ x 1 - 12	Parting strip	" " " " " " " "	"	6
#200	Lin. Ft. 1/2" x1½"	Door and window stops	" " " " " " " "	"	25

If surfaced material is not available, buy rough and surface by hand when desirable.

If mill or factory made frames can be purchased, buy them in lieu of the above material -- see mill order list.

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
	Mill Order List - Doors and Windows.				
* 1	2'0" x 3'0" - 1½"	Colonial, 2-light 21-oz. glass window			
* 1	2'6" x 3'0" - 1½"	" " " " " "			
* 2	2'6" x 4'6" - 1½"	" " " " " "			
* 2	3'0" x 4'6" - 1½"	" " " " " "			
* 2	2'8" x 6'8" - 1½"	Colonial, 1-light, 24" x 26", 21-oz glass,3-cross panel doors	See Cut No. B.M.-3		
* 4	2' 6"x6' 8" - 1½"	Colonial, 5-cross panel door	" " " " " "		
* 1	2' 8"x6' 8" - 1½"	" " " " "	" " " " " "		

If mill or factory made frames can be purchased, order -

# 1	Frame for 2'0" x 3'0"	Window, lip rail(no weight)complete as per detail, Sheet 5			
# 1	" " 2'6" x 3'0"	" " " " " " " " " " "			
# 2	" " 2'6" x 4'6"	" " " " " " " " " " "			
# 2	" " 3'0" x 4'6"	" " " " " " " " " " "			
# 2	" " 2'8" x 6'8"	outside door (with sills) " " " " " "			
# 4	" " 2'6" x 6'8"	Inside " (no sills) " " " " " "			
# 1	" " 2'8" x 6'8"	" " " " " " " " " "			
# 2	" " 2'0" x 6'0"	Interior openings,no sill,4" jambs,-4" casing on one side only.			

Note:-

SPECIFY THICKNESS OF WALLS for each door and window frame, and submit with each order a blue print of Sheet 5, which shows frames in detail, When factory or mill made frames are purchased, specify that all outside casings shall be 1" x 6"; all inside casings shall be 1" x 4".

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
	Kitchen Cabinet.				
* 9	1 x12 - 16	To be ripped for various members	No. 2 Clear Pine or R.W.	S4S	144
* 2	1 x 6 - 16	" " " " " "	" " " " " " "	"	16
* 1	1½x12 - 16	Flour bin and drawer	" " " " " " "	"	24
# 3	18"x 48"	Glass panel doors			
		or			
# 6	1 x 4 - 12	T.& G.ceiling	"C"Grade California, or No.3 clear Oregon D.F.		24
* 1	1½x20 - 9	Drain board	No.2 clear Yellow pine	S4S	23
* 2	1 x 4 - 12	T.&G.ceiling for small doors	"C"Grade California, or No.3 clear Oregon D.F.		8
* 1	1½x10 - 4	For small doors	No.2 clear Pine or Redwood	S4S	5

Note:- If practicable, purchase glass panel doors or stock cupboard doors; if not, add T.&G.material listed above to lumber order.

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
	Clothes Closet.				
* 1	1 x12 - 16	Shelves	No.2 Clear, any species	Rough or S4S	16

Hardware List.

*10	Lbs.	30d.	Commonwwire nails	, frame
*30	"	20d.	" " "	"
*50	"	10d.	" " "	"
*15	"	10d.	" " "	,outside cover below water table.
*35	"	10d.	" " "	,roof,sheeting and scaffolds.
*30	"	3d.	Fine Galv." "	, for roof, shingles./flashing
* 5	"	2d.	" " " "	, " " ",over eaves and
*15	"	10d,	Casing nails	for window and door frames,finish
*10	"	8d,	" " "	flooring
* 4	"	3d.	Finish "	,interior closets, etc.
*30	"	8d.	Casing "	,for inside misc.finish.
*10	"	6d.	" "	" " " "
#75	"	6d.	" "	,if interior walls and ceiling are 1 x 4 T.&G.
#75	"	8d.	" " " "	" " " " boards and battens.
#40	"	8d.	" " " "	" " " shiplap
#22	"	10d.	Common wire nails	,if outside wall cover is 1 x 8 lapped.
#20	"	8d.	Casing " "	,if outside wall cover is rustic or siding.
#20	"	3d.	Fine Galv. "	,if outside wall cover is shingles.

*110	ft.	4" Galvanized Flashing
* 2		3" Bolts #SC 1078¼
* 7	pr.	3½" half surface butts AC for doors
* 7	"	Rim latches #8052 knob #9241, for doors.
* 12	"	Window spring bolts, upper and lower sash.
* 1	"	3" full surface butts, AC for cabinet table.
* 3	"	2½" " " " " " " doors.
* 3		Cupboard catches #4800 A.C.
* 1	pr.	2" loose pin brass cupboard hinges for table legs.
* 2	"	2" " " " " " " small doors.
* 3		Drawer-pulls, #672 A.C.
* 1	doz.	Coat hooks, #92-J.

Note:- Numbers following items of hardware are Pacific Hardware & Steel Company's Catalogue numbers. See hardware list in Building Material Section.

Flue.

The builder should always submit Details No.6-A or 6-B with orders for flue materials. This is important. Irrespective of the pitch of roof the articles following before which the mark (*) appears are to be ordered.

* 1 8" Terra cotta starting plate.
* 2 Tees " " , 12" long 8" diameter.
* 1 8" " " straight joint
* 1 Galvanized iron, 26 gauge, drip ferrule to fit over 8" T.C. and over 6" galvanized pipe.

1/4 Pitch Roof.

1 Galvanized roof plate, 26 gauge, with pipe projection to fit around 8" terra cotta pipe for 1/4 pitch roof.
1 10'8" length, 26 gauge, galvanized pipe made so as to slide inside 8" terra cotta pipe. On bottom it shall be made to fit on to standard 6" black iron stove pipe. On its top shall be riveted a plain convex storm hood of standard design.
3 8" Terra cotta socket joints.

1/3 Pitch Roof.

1 Galvanized roof plate, 26 gauge, with pipe projecting to fit around 8" terra cotta pipe for 1/3 pitch roof.
1 12'6" length, 26gauge, galvanized pipe made so as to slide inside 8" terra cotta pipe. On bottom it shall be made to fit on to standard 6" black iron stove pipe. On its top should be riveted a plain convex storm hood of standard design.
1 8" Terra cotta socket joint.

*1.8 lbs. Cement for each joint of terra cotta.
*2.3 " Clean sharp sand for each joint of terra cotta.

Paint.

* 4 Gal. Regulation Outside body Gray paint.
* 1½ " " " trim White "
* 4 " " " roof Green "
* 3 " " Floor paint.
* 2 lbs. Putty
* 6 pcs. Sandpaper No. 1.
# 1½ Gal.Boiled Linseed Oil
# 1 " Turpentine.

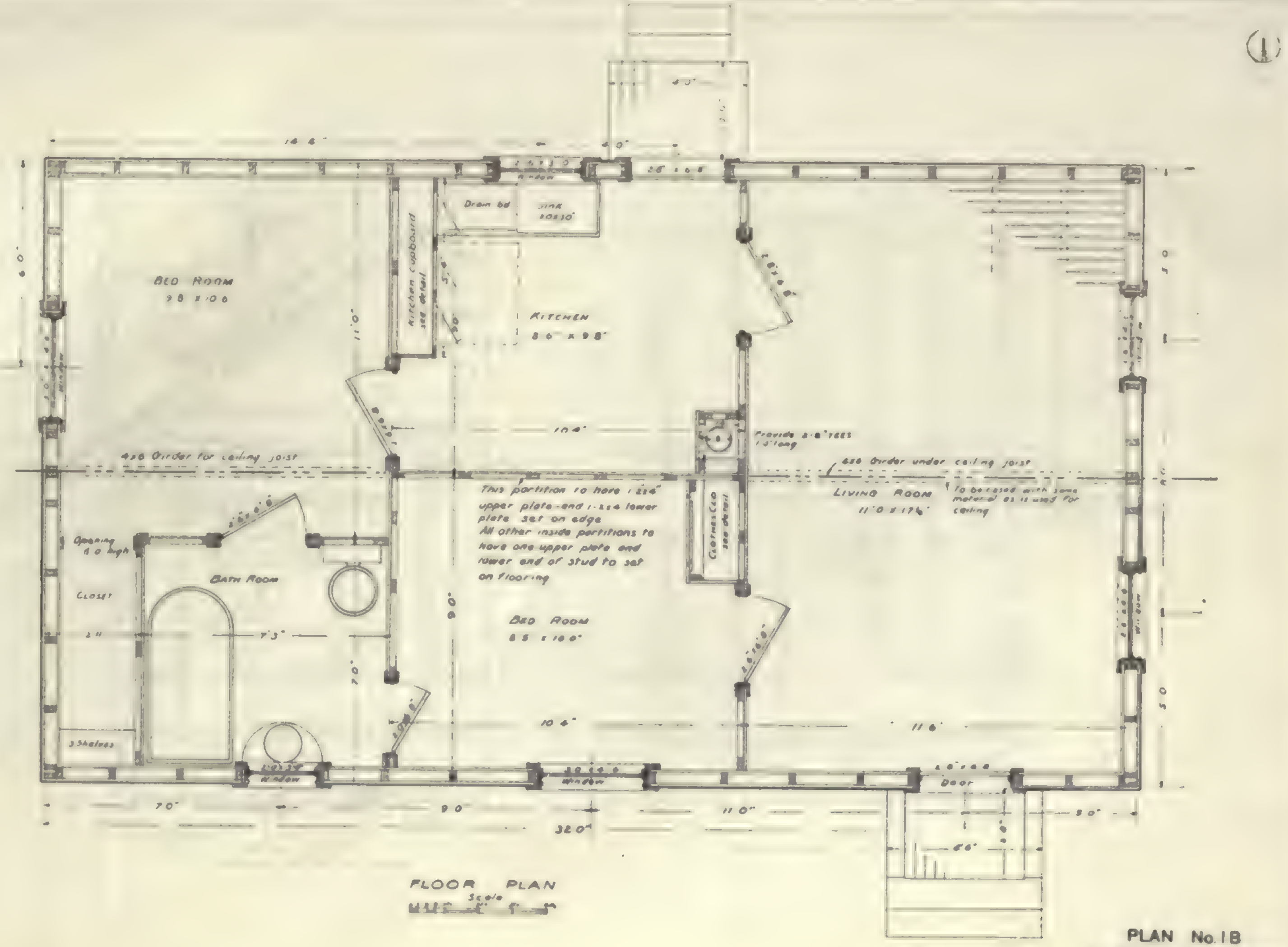
If Laird & Sinclair paint is used, omit Linseed Oil and Turpentine, and add:

# 1 Gal.Aroturps for each 5 gallons of outside paint on order list.

Note:-
See Paint and Painting Section of this Manual for interior painting. Select choice and add quantity of paints or stains to the paint order list.

Cement.

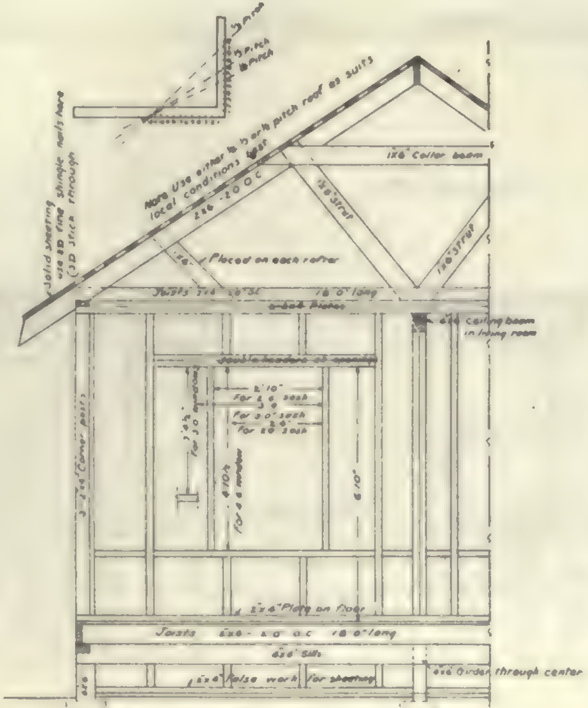
See specifications for all concrete work, if practicable, for this building.


1
BED ROOM
9'8" x 10'0"
KITCHEN
8'0" x 9'8"
Kitchen cupboard see detail
Drain bd
Sink 20x30
Window
Provide 2-8" tees 1'0" long
4x6 Girder for ceiling joist
4x6 Girder under ceiling joist
This partition to have 1-2x6" upper plate and 1-2x4 lower plate set on edge
All other inside partitions to have one upper plate and lower end of stud to set on flooring
Clothes Clo see detail
LIVING ROOM
11'0" x 17'6"
To be cased with same material as is used for ceiling
Opening 6'0" high
Closet
3 Shelves
BATH ROOM
BED ROOM
8'5" x 10'0"
Window
Door
14'6"
6'0"
11'0"
10'4"
9'0"
7'0"
7'3"
2'11"
10'4"
11'6"
5'0"
7'0"
9'0"
11'0"
32'0"
5'0"
6'6"

FLOOR PLAN
Scale

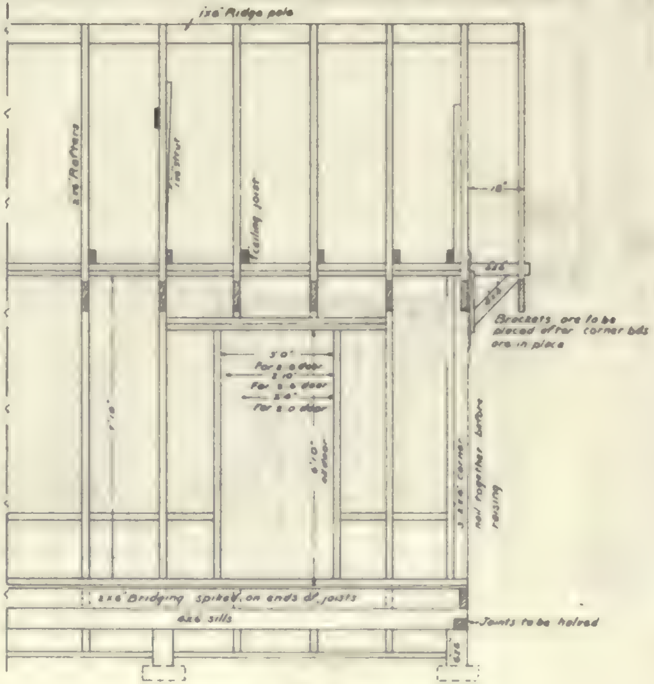
PLAN No. 1B
4 ROOM DWELLING
18'0" x 32'0"
U S FOREST SERVICE
DISTRICT No. 5

②



5/pitch
1/3 pitch
1/4 pitch
Note Use either 1/3 or 1/4 pitch roof as suits local conditions best
2x6 - 2-0 O.C.
1x6" Collar beam
1x6" Strut
1x6" Strut
1x6" Placed on each rafter
Solid sheeting use 8D fine shingle nails here (3D stick through
Joists 2x4 - 2-0" O.C. 18'-0" long
2-2x4 Plates
6x6 Ceiling beam in living room
Double headers at openings
2'10" For 2-6 sash
3'4" For 3-0" sash
2'4" For 2-0 sash
3'4 1/2" For 3-0 openings
4'10 1/2" For 4-6 window
6'10"
3-2x4 Corner posts
2x4" Plate on floor
Joists 2x8 - 2-0 O.C. 18'-0" long
6x6" Sills
2x4" False work for sheeting
6x6 Girder through center
6x6
Rock or cement footings see specification

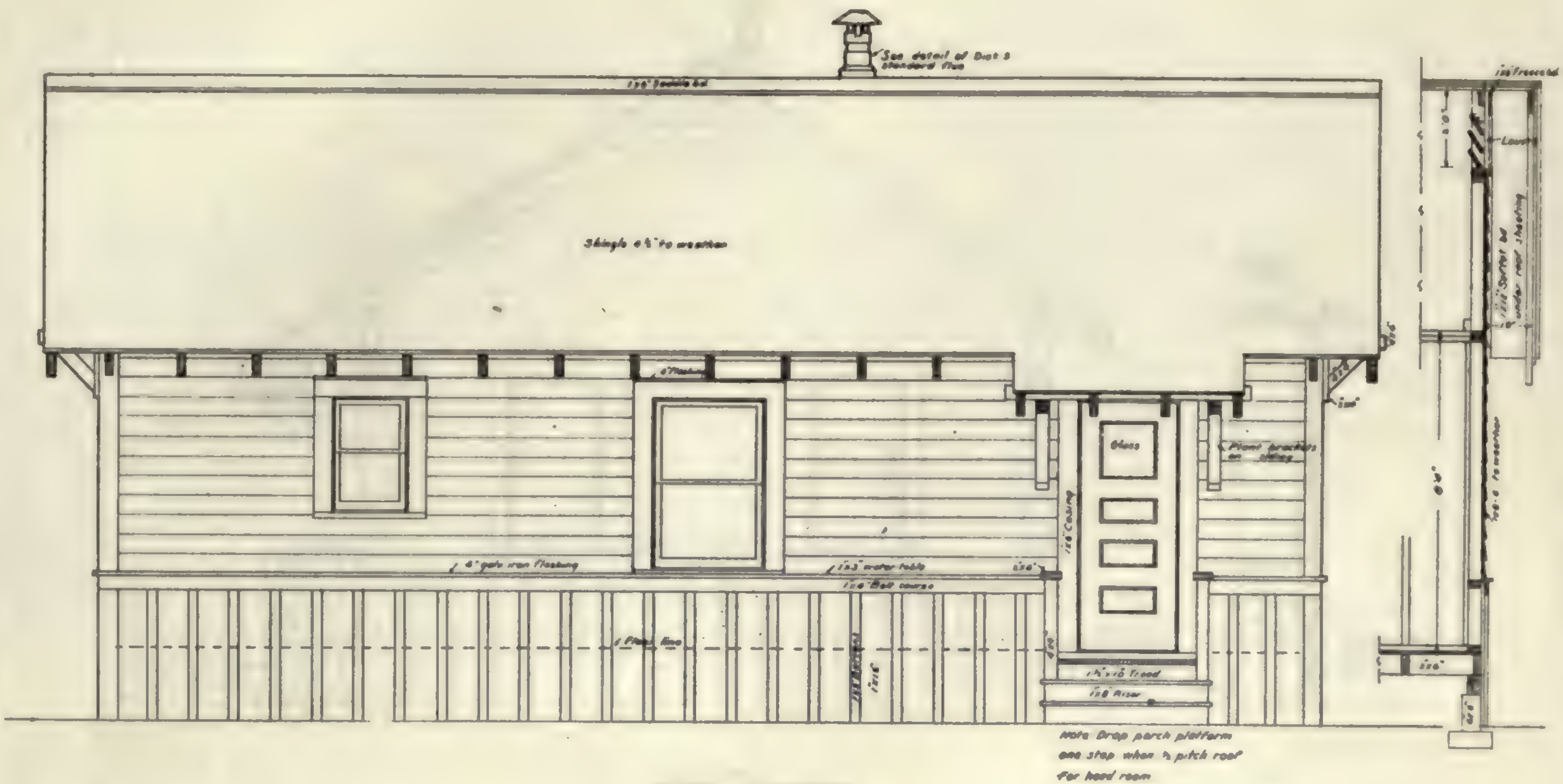
CROSS SECTION
SHOWING METHOD OF FRAMING



LONGITUDINAL SECTION

PLAN No. 1B
4 ROOM DWELLING
18-0 X 33-0
U. S. FOREST SERVICE
DISTRICT No. 6

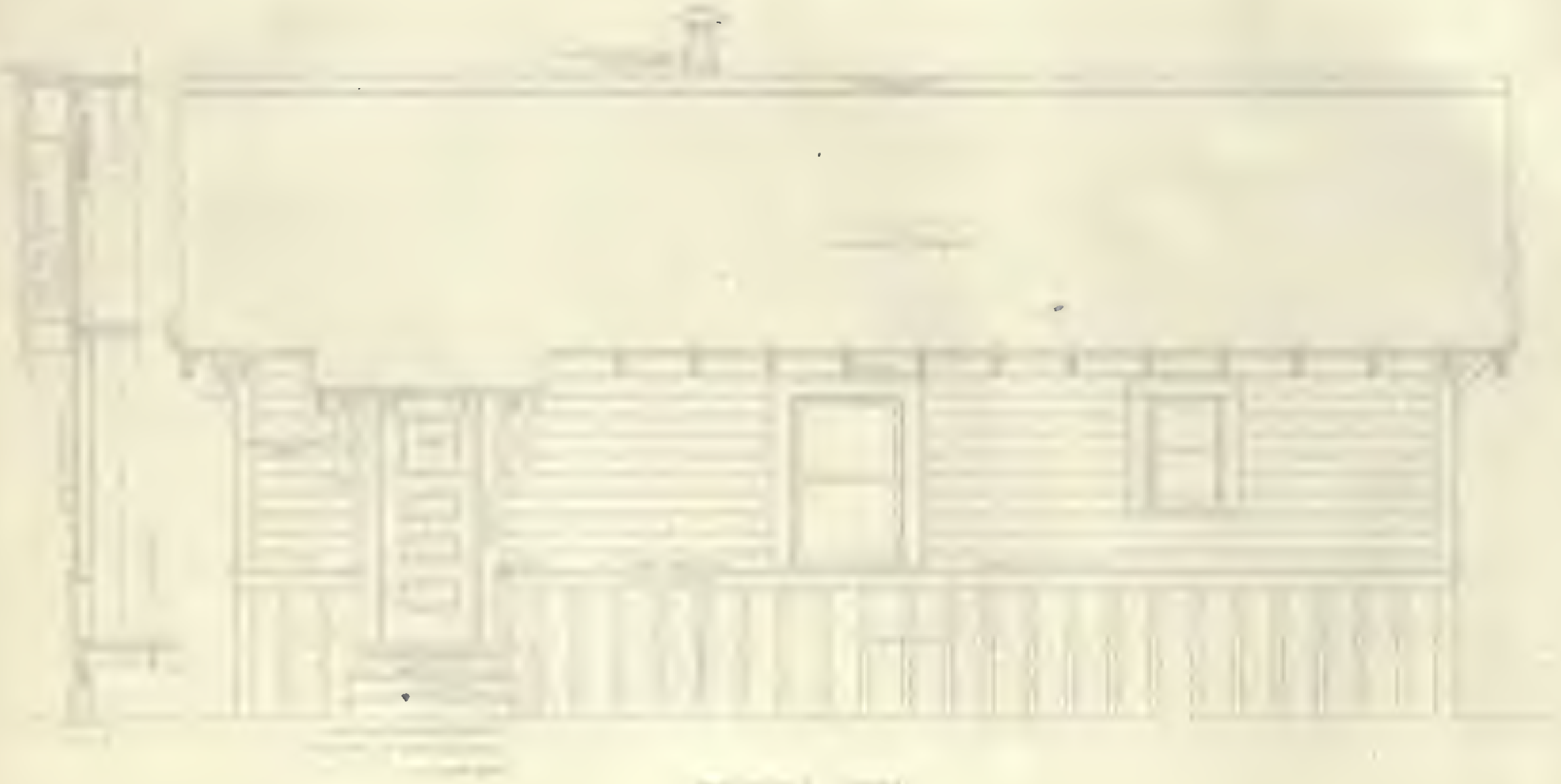
③



FRONT ELEVATION

PLAN No. 1B
4 ROOM DWELLING

18 0' X 32 0'
U. S. FOREST SERVICE
DISTRICT No 6



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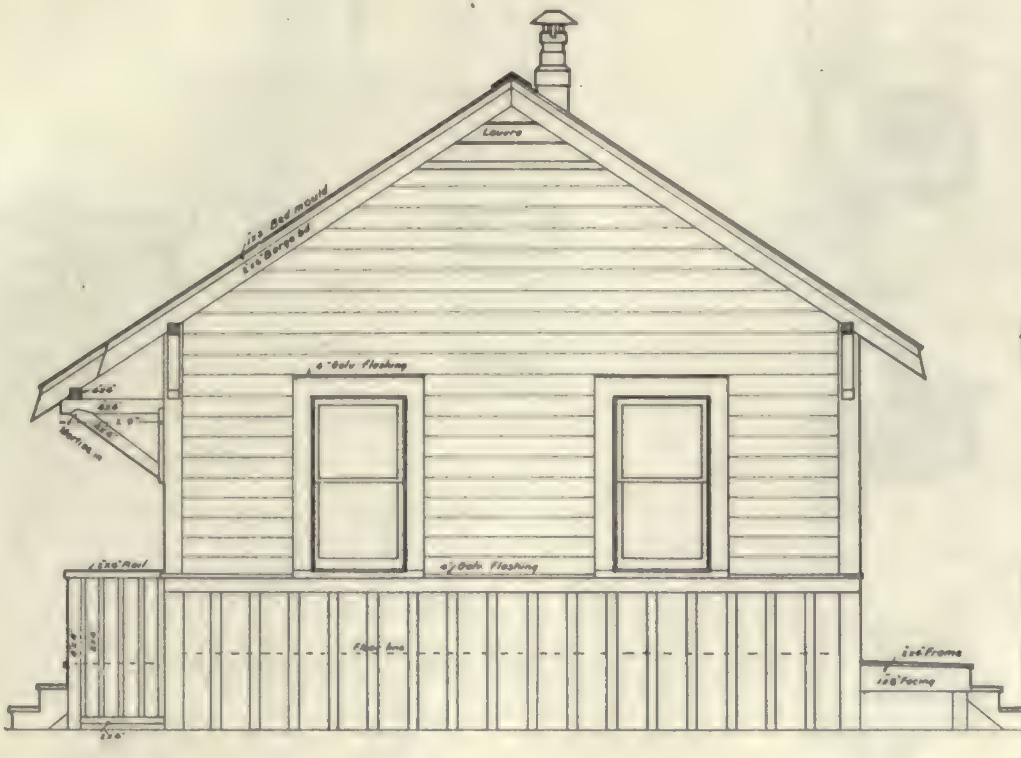
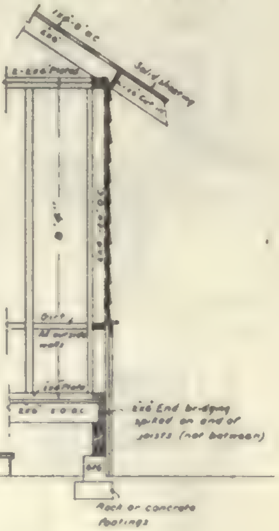
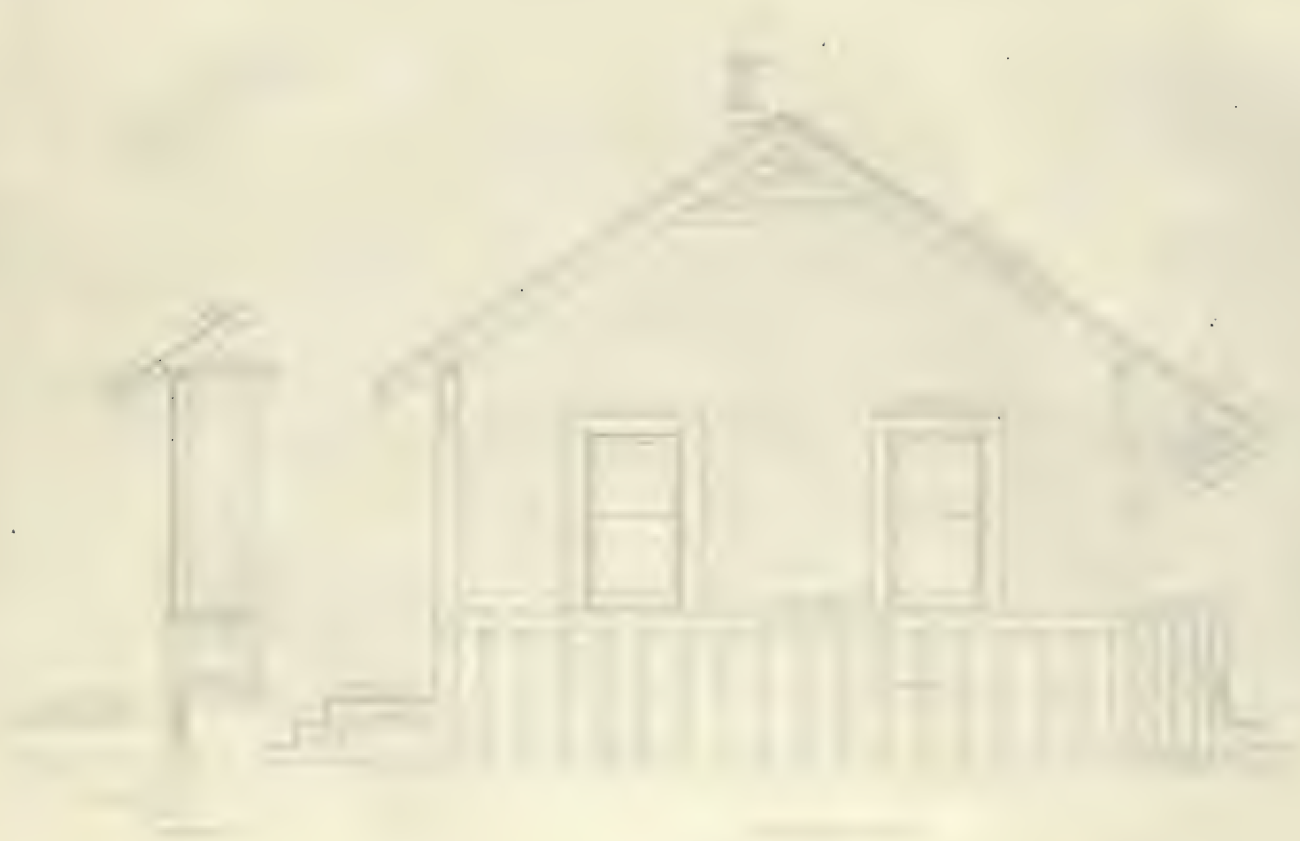


END ELEVATION

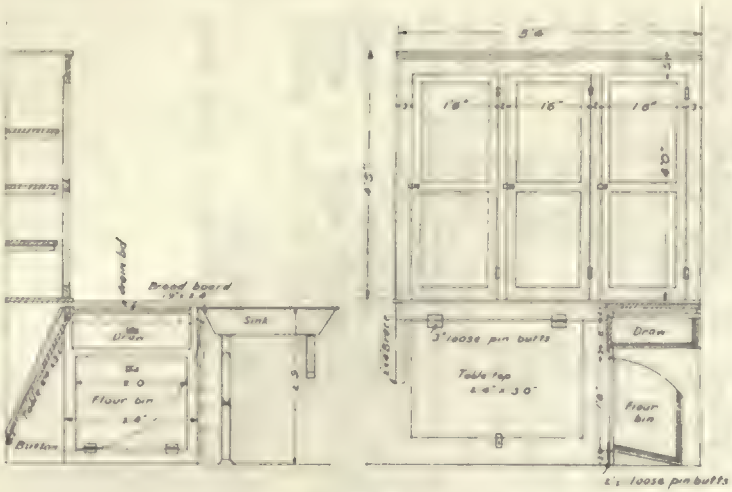

Solid sheathing
2-2x4 Plates
Girt
All outside walls
2x4 Plate
2x6 End bridging spiked on end of joists (not between)
Rock or concrete footings

SECTION

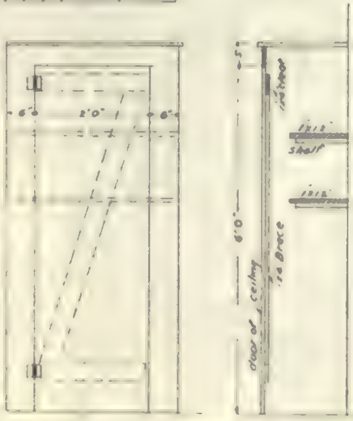
PLAN No. 1B
4 ROOM DWELLING
18 0 X 32 0
U. S. FOREST SERVICE
DISTRICT No. 5



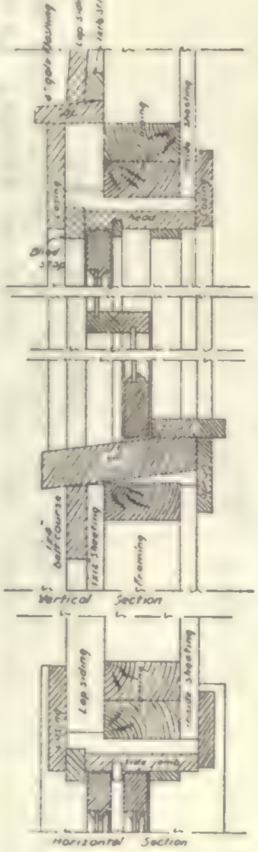
⑤



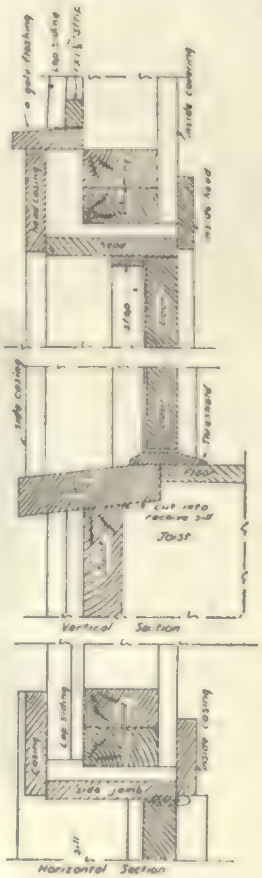
DETAIL OF KITCHEN CUPBOARD AND SINK
Scale



DETAIL OF CLOTHES CLOSET
Scale same as cupboard



DETAIL OF WINDOW FRAME



DETAIL OF OUTSIDE DOOR FRAME

Scale

Note Sill and jambs of both doors and windows to be made narrower if rustic or boards and battens are used for out side cover

PLAN No.1B
4 ROOM DWELLING
16'0"X32'0"
U S FOREST SERVICE
DISTRICT No 6

PLAN NO. 1-B

FOUR-ROOM RANGER DWELLING

18'0" x 32'0"

Items preceded by the mark (*) are standard and are not subject to change or choice. Conditions of the local lumber markets, and the isolation of certain building sites from markets carrying a varied stock of lumber are factors which will govern selection of the type of outside and inside wall cover, trim and sizes and kinds of nails. Elevation of the particular building site will determine the slope of roof to use and the dimensions of the roof frame material to order. All items subject to change or choice are indicated by the mark (#). To prepare a complete order list, select the items marked (#) which, under the particular circumstances, will be best adapted for use at a given building site. Add such items to those marked (*). To all items of lumber add the specifications shown under "Grade and Species" and "Finish". For example, two pieces 4" x 6" - 16' No. 1 Common, redwood, cedar, Douglas fir or pine, rough. To all items of hardware add only such descriptive matter as is necessary to adequately describe each item. For example, 2 pounds 30d. common wire nails - 3 pounds 30d. fine galvanized wire nails. Do not show on the order list the purpose for which the hardware items are to be used.

Estimated cost of construction - labor at $4.00 per day - $185.00.

Builder's List of Materials

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.

Sills, Floor and Ceiling Joists

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
* 6	4 x 6 - 16	Side and center sills)	Redwood, Cedar or Douglas Fir	Rough	192
* 2	4 x 6 - 18	End sills)	" " " " "	"	72
*17	2 x 6 - 18	Floor joists)	No. 2 Clear, D. F. 1st choice	Sized	306
* 4	2 x 6 - 16	End bridging)	" " W. F.R.F 2nd "	if	64
* 2	4 x 6 - 12	Ceiling joist girders)	" " Y. P. 3rd "	Practic-	48
*17	2 x 4 - 18	Ceiling joists)		able	204
* 1	6 x 6 - 16	Underpinning	Heart cedar or redwood	Rough	48

Note:- The item underpinning includes sufficient material shown in plan. The actual amount needed will depend upon the slope of the ground of each particular building site. Make due allowance for this item in the lumber order. If split or round material is used this item may be eliminated from the lumber list.

Studding, Plates, Girts, Etc.

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
*50	2 x 4 - 16	Studding	No. 1 Common, any species	Rough-Sized	533
* 8	2 x 4 - 18	End & cross partition plates	" " " "	if Practic-	96
*16	2 x 4 - 16	Side & Partition plates	" " " "		171
* 6	2 x 4 - 16	Girts	" " " "	able	64
*10	2 x 4 - 16	Window & door trimmers	" " " "		107
* 6	2 x 4 - 16	False foundation frame	" " " "		64
# 4	1 x 6 - 18	Diagonal braces for building designed to carry heavy loads (snow)	" " " "		36
# 4	1 x 6 - 14	Do	" " " "		28

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
		Wall Covering (Outside) Below Water Table (Standard regardless of cover above water table)			
* 25	1 x12 - 16	Sheeting for base	No. 1 Common, any species	Rough or S1S	400
* 400	Lin.Ft. 5/8x3	Battens " "	" " " "	" " S4S	100
* 9	1 x 4 - 12	Belt course	No. 2 Clear " "	" " S4S	36
* 9	1 x 3 - 12	Water table	" Common " "	" " S4S	27

Note:- The first two items include sufficient siding for buildings having underpinning of the height shown on plan. The actual amount needed will depend upon the slope of the building site. Make due allowance for this item in the lumber order.

# 725	B. F. 1 x 8	Sheeting (above water table 6" to weather	No. 1 Common, any species	Rough	725
		or			
# 675	" 6" or 8"	Rustic or Drop siding (above water table)	("C" Grade California (No. 3 Clear, Oregon, D. F.		675
		or			
#4000	- -	Shingles (above water table)5" to weather	Star A Star, red cedar		
# 300	B.F. 1 x 4	Sheeting 8" O.C. (for shingles)	No. 2 Common, any species	Rough	300 ~~100~~

Roof Frame and Cover, 1/4 Pitch, 2' Eave and Gable Projection
(Elevation up to 2000 feet)

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
#30	2 x 4 - 14	Rafters 2' O.C.	Same as floor joists	Rough	280
# 4	2 x 4 - 16	" 2' O.C.	" " " "	"	43
# 2	1 x 6 - 16	Ridge pole	No. 1 Common, any species	"	16
# 8	1 x 6 - 16	Collar beams	" " " "	"	64
# 6	1 x 6 - 14	Rafter ties to joists near plate	" " " "	"	42
#400	B.F. 1 x 4	Sheeting 8"O.C.(except 2' rafter projection	No. 2 " " "	"	400
#7250		Shingles 4½" to weather	Star A Star red cedar		
# 4	1 x 6 - 18	Saddle boards	No. 1 Common, any species	"	36
#10	1 x12 - 16	Sheeting 2'rafter projection	" " " "	Rough or S1S	160
# 4	2 x 6 - 14	Barge boards	" " " "	" " S4S	56
# 4	1 x 2 - 14	" " trim	No. 2 Clear " "	" " "	9
# 4	1 x 6 - 12	Frieze boards	No. 1 Common, " "	" " "	24
# 4	1 x 4 - 12	Rafter end frieze between rafters	" " " "	" " S1S	16
# 1	2 x 8 - 16	Sills for Louvre	" " " "	" " S4S	21
# 2	1 x 8 - 16	Louvre jamb and slats	" " " "	" " S1S	21
# 8	1 x10 - 12	Soffit gable projection	" " " "	" " "	80

The preceding 8 items are listed rough or surfaced, etc., If rough lumber wall cover is used these will be rough; if rustic or drop siding wall cover is used order surfaced lumber as indicated. If shingle wall cover is used ordinarily these items will be rough, but occasions may arise where preferable to surface as indicated. Substitute milled bed mould for barge trim when rustic wall cover is used and add 4 pieces 12' long of 1" 1/4 round moulding for frieze trim.

#120	B.F. 1 x 8	Sheeting gable ends 6" to weather	No. 1 Common, any species	Rough	120
#120		OR If rustic or drop siding wall cover is used	No. 3 Oregon D. F.) "C" Grade California)		120
		OR If shingle wall cover is used			
#56	B.F. 1x4	Sheeting 8"O.C.for shingles	No. 2 Common, any species		56
#900	- - -	Shingles	Star A Star red cedar 5" O.C.		

Roof Frame and Cover, 1/3 Pitch, 18" Eaves and Gable Projection

(Elevation between 2000 and 3500 feet)

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
#30	2 x 6 - 14	Rafters 2' O.C.	Same as floor joists	Rough	420
# 4	2 x 6 - 16	" 2' O.C.	" " " "	"	64
# 2	1 x 8 - 16	Ridge pole	No. 1 Common, any species	"	28
# 8	2 x 6 - 16	Collar beams	Same as joists	"	128
#16	2 x 6 - 12	Struts for truss	" " "	"	192
# 6	1 x 6 - 14	Rafter ties to joist near plate	No. 1 Common, any species	"	42
#450	B.F. 1 x 4	Roof sheeting 8"O.C. (except 18" eaves)	No. 2 " " "	"	450
#7500	- -	Shingles (roof) 4½" to weather	Star A Star red cedar		
# 4	1 x 6 - 18	Saddle boards	No. 1 Common, any species	"	36
# 9	1 x12 - 16	Sheeting 18" rafter projection	" " " "	Rough or S1S	144
# 4	2 x 6 - 14	Barge boards	" " " "	" " S4S	56
# 4	1 x 2 - 14	" " trim	No. 2 Clear " "	" " "	9
# 4	1 x 6 - 12	Frieze boards	No. 1 Common " "	" " "	24
# 4	1 x 6 - 16	Rafter frieze between rafters	" " " "	" " S1S	32
# 1	2 x 8 - 16	Sills for Louvre	" " " "	" " S4S	21
# 2	1 x 8 - 16	Louvre jambs and slats	" " " "	" " S1S	21
# 4	1 x 8 - 12	Soffit for gable projection	" " " "	" " "	32
# 4	1 x 6 - 12	" " " "	" " " "	" " ""	24

The preceding 9 items are listed as rough or surfaced, etc. If rough lumber wall cover is used all will be rough; if rustic or drop siding wall cover is used, order surfaced as indicated. If shingle wall cover is used ordinarily these items will be rough, but occasions may arise where preferable to surface as indicated. Substitute milled bed mould for trim of barge when rustic wall cover is used and add 4 pcs.12'long of 1"1/4 round for frieze trim.

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
#150	B.F. 1x8	Sheeting gable ends 6"to weather	No. 1 Com. any species	Rough	150
OR- If Rustic or drop siding wall cover is used					
#15[illegible]	B.F.	Rustic or drop siding (gable end cover)	"C"Grade California) No.2 Oregon, D. F.)	"	150
OR - If shingle wall cover is used					
#70	B.F. 1 x 4	Sheeting 8" O.C.	No. 2 Common, any species	"	70
#1000	- -	Shingles 5" to weather	Star A Star, red cedar		,

Roof Frame and Cover, 1/2 Pitch, 18" Eave and Gable Projection
(Elevations over 3500 feet)

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
#30	2 x 8 - 16	Rafters 2' O.C.	Same as floor joists	Rough	480
# 4	2 x 8 - 18	" 2' O.C.	" " " "	"	96
# 2	1 x10 - 16	Ridge pole	No. 1 Common, any species	"	27
# 8	1 x 6 - 18	Collar beams	Same as floor joists	"	72
# 4	1 x 6 - 16	Rafters ties to joist near plate	No. 1 Common, any species	"	32
#575	B.F. 1 x 4	Sheeting (roof) 8" O.C.(except 18" eaves)	No. 2 " " "	"	575
#9000	- -	Shingles (roof) 4½ to weather	Star A Star, red cedar		
# 4	1 x 6 - 18	Saddle boards	No. 1 Common, any species	"	36
# 9	1 x12 - 16	Sheeting 18" rafter projection	" " " "	Rough or S1S	144
# 4	2 x 8 - 16	Barge boards	" " " "	" " S4S	86
# 4	1 x 2 - 16	" " trim	No. 2 Clear " "	" " S4S	11
# 4	1 x 8 - 14	Frieze boards (gable)	No. 1 Common, " "	" " "	38
# 4	1 x 8 - 16	Rafter frieze between rafters	" " " "	" " S1S	43
# 4	1 x 8 - 14	Gable projection soffit	" " " "	" " "	37
# 4	1 x 6 - 14	" " "	" " " "	" " "	28

The preceding 7 items are listed as rough or surfaced, etc. If rough lumber wall cover is used all will be rough; if rustic or drop siding wall cover is used order surfaced as indicated. If shingle wall cover is used, ordinarily these items will be rough, but occasions may arise where preferable to surface as indicated. Substitute milled bed mould for trim of barge when rustic wall cover is used and add 4 pcs. 14'long of 1"1/4 round for frieze trim.

#200	B.F. 1 x 8	Sheeting 6"to weather gable ends	No. 1 Com. any species	Rough	200
OR -		If rustic or drop siding wall cover is used			
#200	B.F.	Rustic or drop siding gable end cover	No. 3 Clear Oregon"D.F. "C" Grade California	"	200
OR -		If shingle wall cover is used			
#98	B.F. 1 x 4	Sheeting for shingles (gable ends)	" " " "	"	98
#1300	- -	Shingles 5" to weather	Star A Star, red cedar		

No Louvres for building with 1/2 pitch roof

Outside Trim

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
* 1	2 x 4 - 12	Bracket for gable	No. 1 Common, any species	Rough or S4S	8
* 2	4 x 4 - 12	" " "	" " " "	" " "	32
* 4	1 x 6 - 14	Corner boards	" " " "	" " "	28

Note:- For rough lumber wall finish order above 3 items rough; surfaced for rustic or drop siding wall cover; and usually rough for shingle wall cover.

Porch Material

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
* 2	2 x 4 - 12	Brackets and supports	No. 2 Clear, any species	Rough or S4S	16^{0}
* 3	2 x 4 - 16	Brackets and balustrade	No. 1 Common, " "	" " S4S	32^{0}
* 1	2 x 6 - 8	Hand rail	" " " "	" " S4S	8^{0}
* 3	2 x 4 - 16	Frame joist	" " " "	"	32
*30	B.F. 1 x 4	T & G Vertical grain flooring	("C"Grade California (No.2 Clear Oregon D.F.		30
* 1	1½x10 - 18	Steps	No. 1 Common, Pine or D. F.	S4S	23
* 1	1 x 8 - 18	Risers	" " " " "	S4S	12
* 1	1 x12 - 12	Stringers and base	" " " " "	Rough or S1S	12^{0}

.^{0} Order rough if rough lumber wall cover is used or surfaced if rustic or drop siding wall cover is used. Remainder of items order as listed. Above estimates will vary according to site - see note following underpinning (1st heading).

Flooring

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
*675	B.F. 1 x 4	T & G Vertical grain Flooring	("C" Grade, California (No. 2 Clear, Oregon D.F.		675

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
Inside Walls and Ceiling Cover (Choice of)					
#2200 B.F.	1x4	T & G material walls and ceiling cover	("C" Grade California (No.3 Clear Oregon D. F.		2200
		or			
# 106	1 x12 -16	Walls and ceiling cover	No. 1 Common, any species	Rough or S1S	1696
# 96	5/8x3 -16	Battens for above	" " redwood, cedar or pine	" " S4S	384
#		or			
#2000 B.F.	8"	Shiplap walls and ceiling cover	("C" Grade California (No.3 Clear Oregon, D. F.		2000
Inside Trim					
# 300 Lin.Ft.	1"	1/4 round moulding for corners when surfaced wall and ceiling cover is used			
# 300 " "	1 x 1	strips No. 2 Clear, rough, for corners when rough wall and ceiling cover is used			
* 9	1 x 6 - 16	Base boards	No. 2 Clear, any species	S4S	144
* 4	1 x12 - 16	Shelves and miscellaneous use	" " " "	"	64

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
		All Door and Window Frames Complete - Including Inside and Outside Casings, Stops, Parting strips, Blind stops, Stools and Aprons - if made on the job.			
# 2	2 x10 - 14	Sills (for 1x8 lap siding walls	No. 2 Clear, Pine or D.F.	S1S	47°
# 2	2 x 8 - 14	" (for rustic, shingle or drop siding	" " " " "	S1S	38°
# 7	1 x 8 - 14	Jambs (for 1x8 lap siding walls	" " Pine, RW. or C.	S1S	66°
# 7	1 x 6 - 14	" (for rustic, shingle or drop siding	" " " " " "	S1S	49°
# 8	1 x 6 - 14	Casing (outside)	" " " " " "	S4S	56°
#10	1 x 4 - 14	" stools & aprons (windows)	" " " " " "	S4S	47°
#12	1 x 4 - 18	" inside doors and openings	" " " " " "	S4S	72°
# 1	1 x 4 - 16	Jambs inside doors	" " " " " "	S1S	6°
# 6	1 x 4 - 14	" " " and openings	" " " " " "	S1S	28°
# 6	1 x 2 - 12	Blind stops	" " " " " "	S4S	12°
# 6	½ x 1 - 12	Parting strip	" " " " " "	S4S	6°
#200	Lin.ft. ½" x 1½"	Door and window stops	" " " " " "	S4S	25°

° If surfaced material is not available buy rough and surface; if desirable surface by hand.

If mill or factory made frames can be purchased it is advisable to buy them in lieu of the above material - see mill order list.

Mill Order List - Doors and Windows

* 2 - 2'8" x 6'8" - 1½" Colonial, 1-light 24" x 26", 21 oz. glass, 3-cross panel doors.
* 1 - 2'8" x 6'8" - 1½" " 5-cross panel door
* 3 - 2'6" x 6'8" - 1½" " 5- " " "
* 1 - 2'0" x 6'8" - 1½" " 5- " " "
* 3 - 1'6" x 4'0" - 1-1/16" Cupboard sash doors, 2-light, 21 oz. glass

* 2 - 3'0" x 4'6" - 1½" Lip rail, 2 light, 21 oz. glass; windows
* 2 - 2'6" x 4'6" - 1½" " " 2 " 21 " " "
* 1 - 2'6" x 5'0" - 1½" " " 2 " 21 " " "
* 1 - 2'0" x 3'0" - 1½" " " 2 " 21 " " "

If mill or factory made frames can be purchased, order -

2 Frames for 2'8"x6'8"-1½" outside door (with sill)complete with inside & outside trim
1 " " 2'8"x6'8"-1½" inside " (no sill) " " " " " "
3 " " 2'6"x6'8"-1½" " " (" ") " " " " " "
1 " " 2'0"x6'8"-1½" " " (" ") " " " " " "

2 " " 3'0"x4'6"-1½" windows, lip rail(no weight) " " " " " "
2 " " 2'6"x4'6"-1½" " " " (" ") " " " " " "
1 " " 2'6"x3'0"-1½" " " " (" ") " " " " " "
1 " " 2'0"x3'0"-1½" " " " (" ") " " " " " "

Note:-

SPECIFY THICKNESS OF WALLS for each door and window frame and submit with each order blue print of Cut 6-D (which shows frame in detail). Order 1" x 6" outside casing and 1" x 4" for inside casing.

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
		Kitchen Cabinet			
* 7	1 x12 - 16	To be ripped for various members	No. 2 Clear, Pine or RW.	S4S	112
* 2	1 x 6 - 16	" " " " " "	" " " " "	S4S	16
* 1	½ x12 - 12	Flour bin and drawer	" " " " "	S4S	12
# 3	- - -	18" x 48" glass panel doors or			
# 6	1 x 4 - 12	T & G ceiling for doors	("C" Grade California (No. 3 Clear Oregon D.F.		24
* 1	1½x20 - 4	Drain board	No. 2 Clear, yellow pine	S4S	10

Note:- If practicable purchase glass panel doors or stock cupboard doors, if not add T & G material listed above to lumber order.

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
		Clothes Closet			
* 3	1 x 6 - 16	Casings and frame	No. 2 Clear, any species	Rough or S4S	24
* 1	1 x12 - 16	Shelves	" " " "	" " "	16
* 4	1 x 4 - 12	T & G for door	("C" Grade California (No.3 Clear, Oregon D.F.		16

HARDWARE LIST.

* 8#	30d.	Common wire nails, frame
*30#	20d.	" " " "
*50#	10d.	" " " "
*15#	10d.	" " " outside cover below water table
*35#	10d.	" " " roof sheeting and scaffolds
*25#	3d.	Fine galvanized iron nails for roof
* 5#	2d.	" " " " " " over eaves and flashing
*12#	8d.	Casing for flooring
*15#	10d.	" " window and door frames and finish
* 4#	3d.	Finish nails, interior finish closets, etc.
*30#	8d.	Casing nails for inside miscellaneous finish
*10#	6d.	" " " " " "
#75#	6d.	" " if interior walls & ceiling are T & G material
#75#	8d.	" " if interior walls & ceiling are boards and battens
#40#	8d.	" " if interior walls & ceiling are shiplap
#22#	10d.	Common nails if outside wall cover is 1x8 lapped
#20#	8d.	Casing " " " " " " rustic or drop siding
#20#	3d.	Fine galv. nails if outside wall cover is shingles

*110	Ft.	4" Galvanized flashing - 30 gauge
* 2	- -	3" Bolts, #SC 1078¼
* 7	Pr.	3½" Half surface butts a.c. for doors
* 7	- -	Rim latches #8052, knob #9241 for doors
* 12	- -	Window spring bolts for upper and lower sash
* 1	Pr.	3" Full surface butts a.c. for clothes closet
* 3"	"	2½" " " " " " kitchen cabinet
* 3	- -	Cupboard catches #4800 a.c.
* 1	Pr.	3" Full surface butts a.c. for table top
* 1	"	2" Loose pin brass cupboard hinges for table legs
* 2	"	Drawer pulls #672ma.c.
* 1	doz.	Coat hooks #92-J

Numbers following items of hardware are Pacific Hardware & Steel Company's Catalogue numbers. See hardware list in Building Material Section.

FLUE *

The builder should always submit Details No. 6-A or 6-B with orders for flue materials. This is important. Irrespective of the pitch of roof the articles following before which the mark (*) appears are to be ordered.

* 1 8" Terra cotta starting joint
* 2 Tees " " 12" long 8" diameter
* 2 8" " " socket joints
* 1 8" " " straight joint
* 1 Galvanized iron, 26 gauge, drip ferrule to fit over 8"T.C. and over 6" galvanized pipe

1/4 Pitch Roof

# 1 Galvanized roof plate, 26 gauge, with pipe projection to fit around 8" terra cotta pipe for 1/4 pitch roof
# 1 9'8" length, 26 gauge, galvanized pipe made so as to slide inside 8" terra cotta pipe. On bottom it shall be made to fit on to standard 6" black iron stove pipe. On its top shall be riveted a plain convex storm hood of standard design.

1/3 Pitch Roof

# 1 8" Terra cotta socket joint
# 1 Galvanized roof plate, 26 gauge, with pipe projection to fit around 8" terra cotta pipe for 1/3 pitch roof.
# 1 10'6" length, 26 gauge, galvanized pipe made so as to slide inside 8" terra cotta pipe. On bottom it shall be made to fit on to standard 6" black iron stove pipe. On its top shall be riveted a plain convex storm hood of standard design.

1/2 Pitch Roof

# 2 8" Terra cotta socket joints
# 1 Galvanized roof plate, 26 gauge, with pipe projection to fit around 8" terra cotta pipe for 1/2 pitch roof.
# 1 13'6" length, 26 gauge, galvanized pipe made so as to slide inside 8" terra cotta pipe. On bottom it shall be made to fit on to standard 6" black iron stove pipe. On its top shall be riveted a plain convex storm hood of standard design.

PAINT

*	4	Gal.	Regulation outside body gray paint
*	1½	"	" " trim,white "
*	4	"	" " roof,green "
*	3	"	Floor paint
*	2	Lbs.	Putty
*	6	Pcs.	Sand paper #1
#	1½	Gal.	Boiled linseed oil
#	1	"	Turpentine

If Laird & Sinclair paint is used, omit linseed oil and turpentine and add -

# 1 Gal. Aroturps for each 5 gallons of outside paint on order list.

Note:- See Paint and Painting Section in this Manual for interior painting. Select choice and add quantity of paints or stains to the paint order list.

SPECIFICATIONS

FOR

FOUR-ROOM RANGER DWELLING

18'0" x 32'0"

These specifications are intended to embrace all material necessary in the erection and completion of the building in all its parts, and to furnish such instructions as appear necessary to give the builder a general idea of the plan. Variations due to different locations and accessibility of lumber markets have been considered and estimates prepared accordingly.

The general plan as regards construction of frame and other vital parts of the structure is to be followed unless permission to deviate from the plans and specifications has first been secured from the District Forester. Deviations of minor consequence, however, may be made by the builder to take care of unforeseen local conditions and circumstances.

EXCAVATION.

Excavation for the foundation of the building shall be carried down to solid earth. The bottom of the excavation shall be level and smooth. When necessary to grade into unlevel ground for the purpose of providing a level building site, the slopes of the excavation resulting must clear the sides of the building by at least 3 feet. If necessary, provision should be made to prevent earth caving from the embankment from contacting with the sills, and foundation posts if of wood.

FOUNDATION.

Foundations should be either of -

(a) 6" x 6" heart cedar, redwood or Douglas fir underpinning, set upon substantial flat stones of sufficient thickness to project at least 4 inches above the ground. Wood blocks should never be used for footings under foundation posts.

(b) If substantial stones are not available, provide a masonry or concrete footing. For masonry use only hard stones, preferably flat ones. All should be carefully imbedded on their broadest faces in mortar of 1 part cement and 2 parts coarse, clean, sharp sand. Each layer should be well filled and flushed up on both sides and firmly bonded together. The tops should be made level to receive the underpinning. See Table No. C-4.

(c) Large stones of sufficient thickness to raise the sill to a height of at least 12 inches above the ground.

(d) Blocks of masonry or concrete at least 12 inches high, 10 inches wide on top and 16 inches square at the bottom. The top of concrete and masonry blocks should be made level to receive the sills. See Concrete Section and Table No. C-4.

(e) If water and sewer pipes are to be placed under a building, foundation blocks or underpinning must be at least 24 inches high.

MATERIALS.

All structural materials should conform as closely as possible to the specifications given in the builder's list and lumber order list. That minor deviations must sometimes be made is recognized as unavoidable.

SILLS.

Should preferably be of cedar or redwood. Douglas fir may be used as a second choice.

Set rectangular sills with narrow edge up.

Sills at corner should be halved together. When two or more pieces are necessary to form the total length of sill a splice should be made on the foundation supports, as indicated on the plan (see Cut No. B.M.-9)

Two or more joints should not occur on the same line of foundation posts. Arrange to have the splices made over foundation posts of different sets.

ROOF.

Materials for roofs at different elevations are provided. At elevations within the ranges mentioned use the roofs of stated pitches. Exception to the above should occur only where snowfall is not a source of hazard as on some of the southern Forests and on the Modoc.

Rafters and other members of the roof frame should be of selected straight grain lumber; 1st choice Douglas fir, 2nd choice white fir, 3rd choice yellow pine, free from knots and other imperfections. Too much attention cannot be given the selection of the best sticks of the lumber order for rafters.

Where roof trusses are used fasten the members securely with 10d. nails in members 1 inch thich and with 20d. nails in members 2 inches thick.

Care should be taken to cut the rafters true in order that they rest firmly on the plate and meet squarely at the apex of the roof.

Roof projections should be sheeted solid with 1" x 12" rough or dressed lumber.

Rafter ends should be finished in the manner illustrated by the diagram "Section".

Use for roof covering either -

(1) Star A Star red cedar or redwood shingles

(2) Shakes of white fir or sugar pine

Lay shingles 4½" to weather on sheeting 8 inches on center. Nail them with 3d. fine galvanized shingle nails. Lay the bottom course of shingles double and project it 1½ inches beyond the sheeting. Allow a 1 inch projection of shingles over the barge board trim. Table No. B.M.-2 gives data on shakes. If shakes are used allow 1½ inches projection at eaves and 1 inch projection over barge board trim.

The ridge of the roof should be finished with 1" x 6" boards.

FLOOR JOISTS, STUDDING, BRIDGING, ETC.

To have all joists and studs sized or made even in width is desirable. Where practicable to have material sized, do so. If impracticable, rough material may be used. To size it by hand may be necessary. Joists should be of selected sticks, straight grain and free from all knots larger than 1 inch in diameter; 1st choice being Douglas fir, 2nd choice white fir, 3rd choice yellow pine. Studding, headers, trimmers, plates, etc., may be of any straight grain material free from loose knots and knots which materially weaken the stick. Lay floor joists directly upon the sills. Where two joists form the span use the lap joint; in all cases place the bow of the joists up. Place solid 2" x 6" bridging at the ends of each joist. If span exceeds 12 feet, place 2" x 4" cross bridging in the center. See Cut No. B.M.-9.

Lay the floor first. Then, place floor plates for both inside and outside walls on top of it.

Make corner studs of 2" x 4" scantling spiked together (see Plan). The corner posts should be assembled before installing them. Place studs on top of floor plates. Double the top plates. In splicing, lap them at least 4 feet and arrange to have the ends of the lap fall over studs.

Double headers over window openings and door openings. If shingle siding is used, double trimmers also.

Place girts of 2" x 4" scantling horizontally in all outside walls midway between the top and bottom plates.

Place girts of the same size as the studding for backing for the outside skirt parts (see Plan).

At elevations of 3000 feet and over brace the studs with 1" x 6" piece cut into the studs, to such a depth that the outside faces of the braces are flush with the outside face of the studs. See Cut No. B.M.-9.

Place ceiling joists directly over plates. Nail them securely to the rafters and nail them to the plate. If the building will be subject to snow load for ceiling joists, give particular care to the selection of good straight grain sticks free from knots larger than 1 inch in diameter and other imperfections, that would weaken the stick. Use 5 - 20d. wire nails for nailing the ceiling joist to the rafters and 2 - 20d. wire nails to toe nail them to the plate.

SIDING.

The plan illustrates the method to follow in placing siding. Note the break at the line of the lowest window sill. At that position place a 1" x 4" water table around the building (see Plan). From the water table to the ground, place 1" x 12" boards vertically with battens over cracks. Nail the board securely to the girts (see instructions under sills, joists, etc.) with 3 - 10d. nails at each nailing place. Fasten the battens with 6d. or 8d. nails set opposite one another at 12" centers. Clinch the nails on the inside. The amount of material required for this base siding will depend upon height of underpinning, which in turn depends upon slope of site. The material as listed contains sufficient siding to cover base of the height measurement shown in the plan. If more or less is needed for a given building, the builder should make allowances accordingly.

As available and as circumstances might dictate, for siding above the water table, the builder may choose any style of siding included in the list.following.

(a) Rough lumber 1" x 8" laid horizontally with a lap of 2 inches. Boards must be free from loose knots, all knots tight or loose having a diameter greater than 1½ inches, weather cracks, rot disfigurements, or large pitch pockets. Set the first board at the bottom on a 1" x 2" strip which should be nailed to studs. Exercise care in spacing the siding in order that the lap will be equal on each board. Nail siding with 10d. nails at top and bottom on to each stud.

(b) Rustic, drop or bevel siding of "C" Grade California material or No. 2 Grade Oregon. Nail siding with 2 - 8d. wire nails at each stud.

(c) Star A Star red cedar shingles placed 5 inches to weather on 1" x 4" sheeting on 8" centers. Nail shingles with 3d. fine galvanized nails.

In placing sheeting for shingle walls cut back the sheeting the width of the door and window casing. Before placing sheeting study the Detail 6-D showing door and window frames where shingles are used.

Before placing siding above the water table insert 30 gauge galvanized iron flashing over the water table and against the studs. Place the siding over the flashing. Also flash over each window frame and exposed door frame.

PORCH AND STEPS.

The size of the porch is limited by the statutory cost limitation of $650. For good reasons living quarters were planned so as to get the maximum of the essentials of housing within the $650 limit. In some localities where lumber is cheaper than $25 per thousand for common material and $35 for finished material, and where hauling charges will be less than $75, a porch of greater dimensions than that of the plan may be constructed. The builder, after applying prices to the material list, and after taking into account the cost of hauling, will be in a position to know how far he can go in way of providing porch space and style of porch. In every case the estimate of material for porches not shown in plan will have to be prepared by the builder. If a new estimate is prepared do not order the material for porches that is included in the material lists. Where snowfall is heavy porches with flat roofs must not be constructed. Where snowfall is a factor of danger, a wide porch with simple overhead beams of 4" x 6" on 3' centers are most appropriate. In no case make a roof flatter than 1/4 pitch or a slope of 3 inches in every foot of horizontal run. Do not use rafters smaller than 2" x 4". To assure proper drainage in all cases give porch floors a slope of 1/4" per foot of run.

The amount of material for steps will depend upon the height of the underpinning used, which in turn will depend upon the slope of the site. The builder should keep this in mind and if more or less material is needed than included in the materialslists, due allowance should be made. Sufficient material for steps is included for underpinning of the height shown in the plan.

Always place step risers on footings of stones. Miter step risers to stringers. Nail steps securely to both risers and stringer.

LOUVRE BRACKETS AND BARGE BOARDS.

At elevations where snowfall is light louvres located in each gable end may be installed. Do not install louvres in regions where snowfall is heavy. Brackets and barge boards should be installed as delineated in drawings. Note that material lists provide more brackets for roof designed to carry heavy snow load than for roofs that will not.

INSIDE FINISH.

Any accessible kind of inside finish may be used, preferably shiplap or beaded or plain ceiling. When ordering from California mills specify "C" Grade; when ordering from Oregon mills or yard specify No. 3 Clear. When milled lumber is not available, dressed or rough lumber with 3/8" x 2" or 1/2" x 2" strips, over cracks, may be used. A 1" x 6" base should be extended around each wall.

MOULDING.

Place moulding in all corners.

1st choice - 7/8" x 7/8" quarter round
2nd " - 3-corner moulding
3rd " - dressed or rough strips 1"x1"
4th " - 1/2" x 2" battens

FLUES.

See Details No. 6-A and 6-B. In regions where snowfall is deeper than 2½ feet, if the flue is installed 3 feet or more from the apex of the roof, place the protector shown in Detail No. 6-B back of the flue. In placing joints of pipe below the roof line see to it that they are so spaced that the joints passing through the roof will be set as shown in the drawing. In some cases, to accomplish the proper position of the joint which passes through the roof, one of the lower joints will have to be cut. Excepting where the bottom joint rests upon its support, the terra cotta should not be closer than 1½" inches to wood work. Guy the top of the flue securely with three guys of No. 9 or No. 12 telephone wire. Place all flues before shingling the roof.

DOORS.

Order doors of the dimensions given on the plan and fit them with locks and hinges as given in the estimate.

DOORS AND WINDOWS.

Order doors and windows and hardware for them according to the specifications given in the material lists. Equip at least one outside door with Forest Service rim locks. Equip both upper and lower window sashes with two spring bolts. To accommodate the bolts provide 1/4" holes at desired height in the window jambs.

WINDOW AND DOOR FRAMES.

Buy factory made frames if practicable. If impracticable order the necessary material and make them on the job in accordance with the plans illustrated on Detail 6-D. Care should be exercised in placing the studding at all openings in order that the frames may be plumbed properly. Allow at least 1/2 inch play on each side, also on the top and on the bottom. Exercise care in setting the frames and see to it that they are set plumb and that they are properly centered. Flash over the windows with 4 inch

No. 30 galvanized iron strips. Where rough board siding is used set the frame casings directly over the siding. Cover holes by notching 1" x 2¼" strips along side of casings.

CUPBOARDS AND CLOSETS.

Build cupboards according to Details shown in the plan and place them as shown in the floor plans.

Where an office cabinet is desired build in accordance with plan shown in Detail 6-C.

Provide closets with two 1" x 12" shelves and a 1" x 4" strip for wardrobe hooks. Place hooks on 18" centers.

PAINTING.

Color - Body - Standard gray, 2 coats
Roof - " green, 2 "
Trim - " white, 2 "
Inside - Any color satisfactory to the occupant, 2 coats
Floor, - Any color, 3 coats

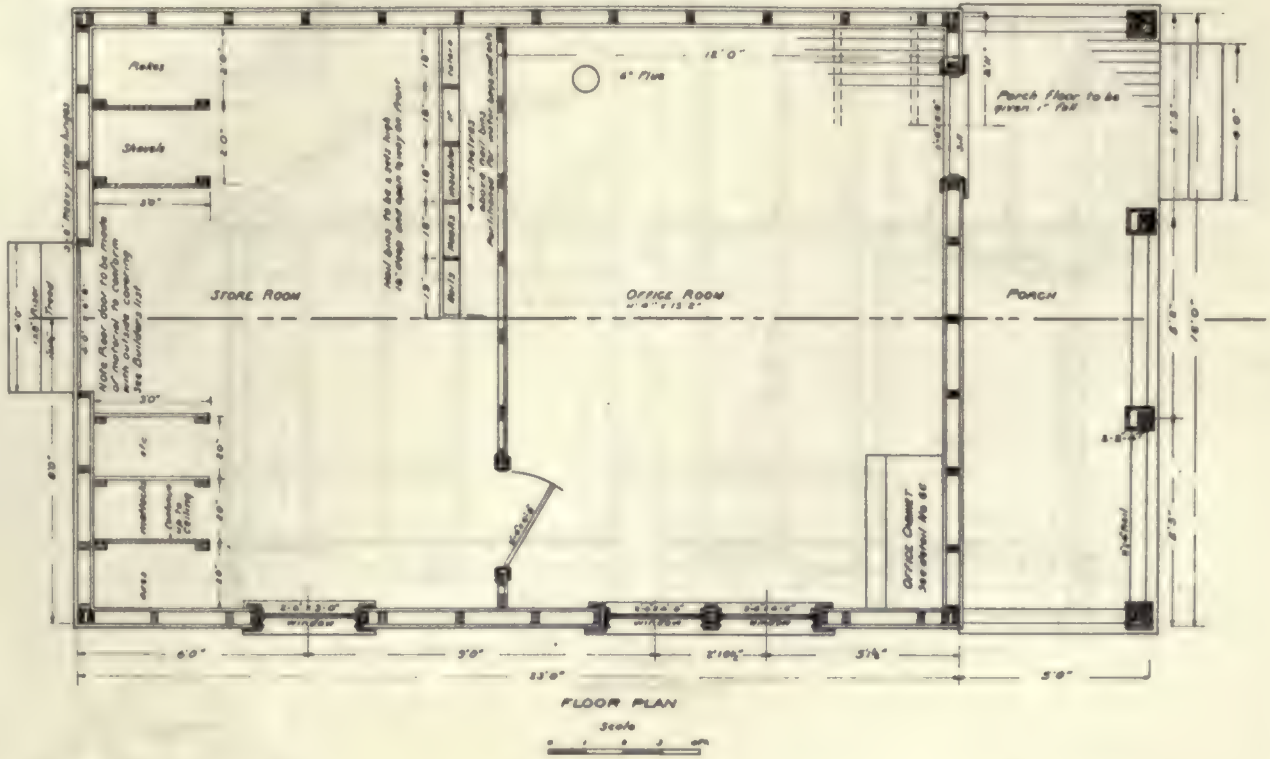
If the lumber is dry, give the outside and roof a priming coat as soon as the siding is placed. Put on the second coat as soon as the first is thoroughly dry. Do not apply paint if lumber is not thoroughly seasoned or if the surface is damp from rains, fogs, frost, etc. Before applying paint to knots, cover them tightly with a coat of shellac. Do not paint during damp weather. Before applying the paint to interior, the surface should be carefully cleaned. All nail holes should be filled with putty and colored to match finish. To have a real fine finish sand the surface. (See Paint Section of the Circular).

The floor should receive three coats of floor paint.

PLUMBING.

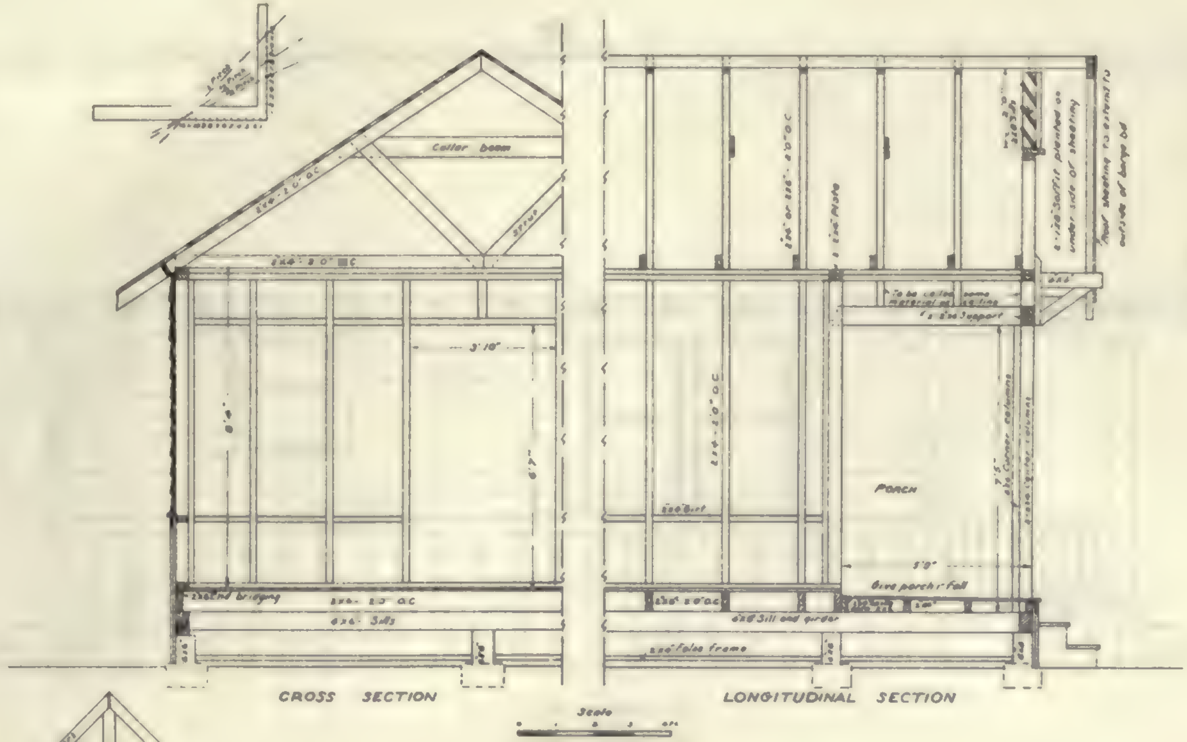
Install the plumbing pipes before laying the floor. Study the Plumbing Section of the Improvement Manual before ordering and installing plumbing fixtures.

①


Rakes
Shovels
3'0" Heavy strap hinges
Note Rear door to be made of material to conform with outside covering See Builder's list
4'0"
1'0" Riser
Tread
3'0"
6'0"
2'0"
10"
etc
Continue up to Ceiling
STORE ROOM
Nail bins to be 4 sets high 10" deep and open to way on front
Nails
10"
19"
4-12" Shelves above nail bins
Partitioned for motor boat
2'0"x3'0" Window
6'0"
9'0"
OFFICE ROOM
11'6" x 13'2"
12'0"
6" Flue
Office Cabinet See detail No 66
2'10½"
5'1½"
33'0"
Window
3'0"
Porch floor to be given 1" fall
PORCH
8'0"
16'0"
5'0"
5'3"
FLOOR PLAN
Scale
0 1 2 3 4 ft

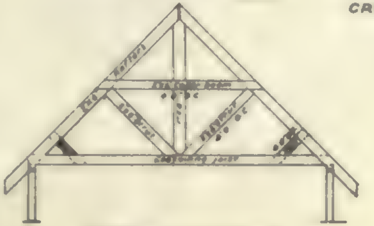
PLAN No 10
OFFICE & STORE ROOM
16'0" x 33'0"
U. S. FOREST SERVICE
DISTRICT No. 6

②



CROSS SECTION

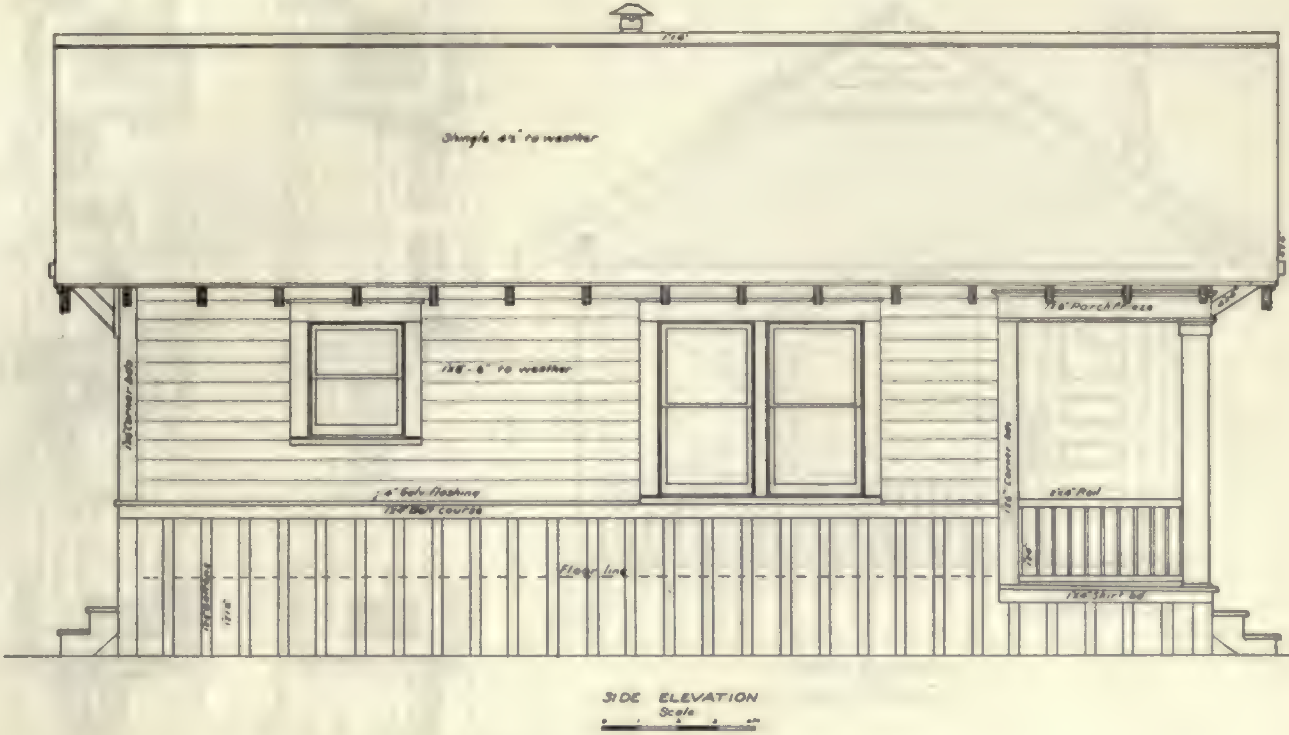
LONGITUDINAL SECTION



Roof truss for ½ and ⅓ pitch roofs subject to heavy snow loads.

PLAN No. 10
OFFICE & STORE ROOM
16'0" X 28'0"
U. S. FOREST SERVICE
DISTRICT No. 1

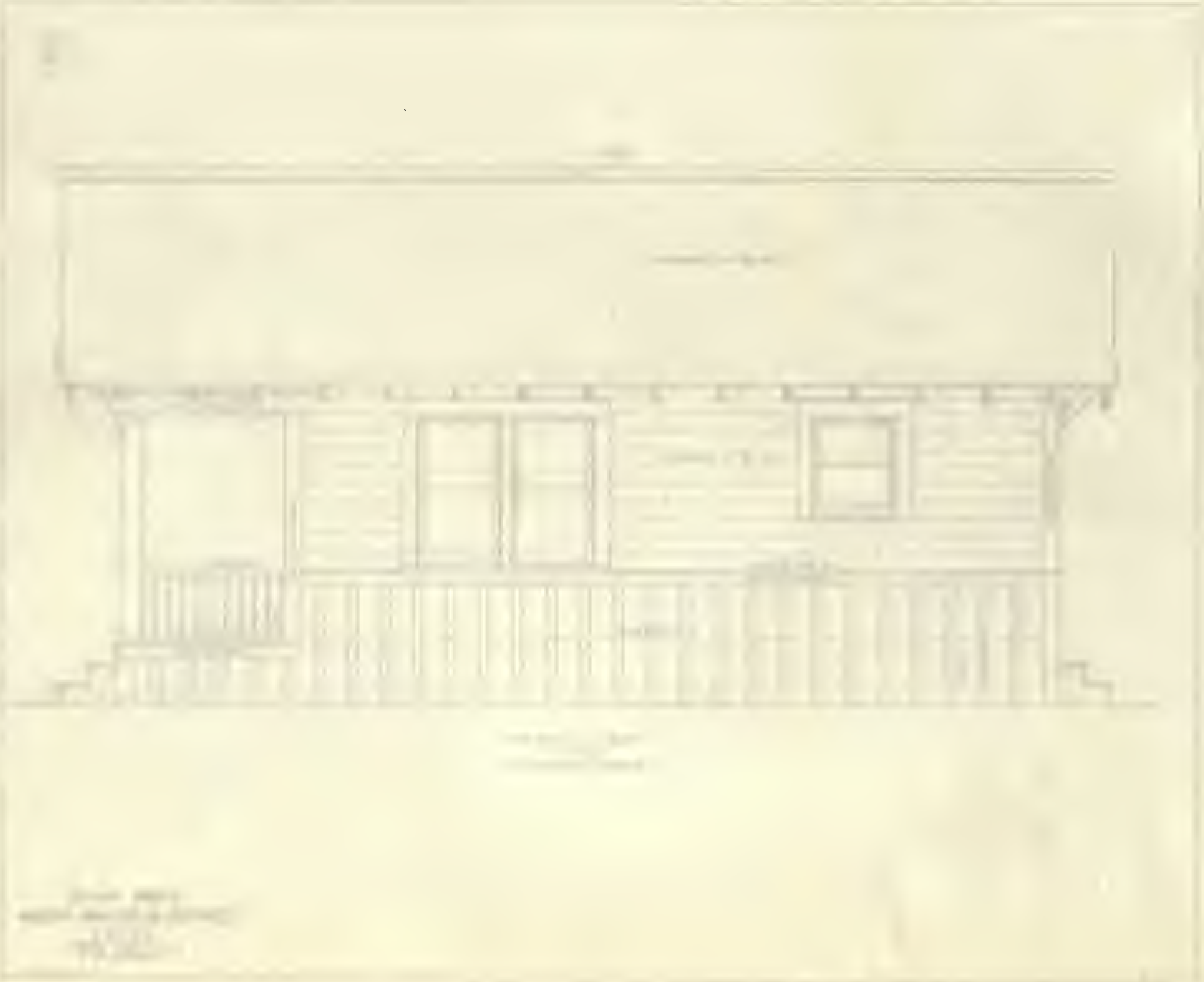
③



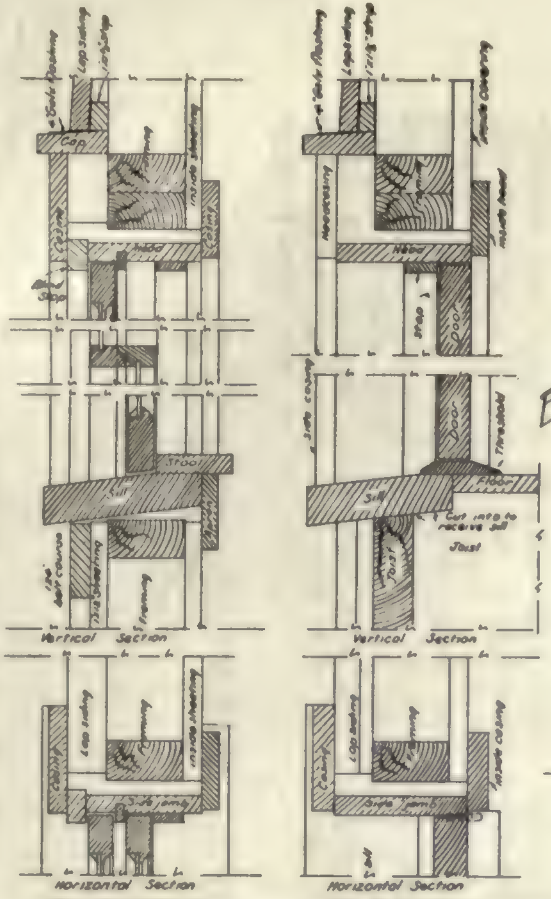
SIDE ELEVATION

PLAN No.10
OFFICE & STORE ROOM
18'0" X 28'6"
U. S. FOREST SERVICE
DISTRICT No. 5

E.B.M. 9-20-19



④

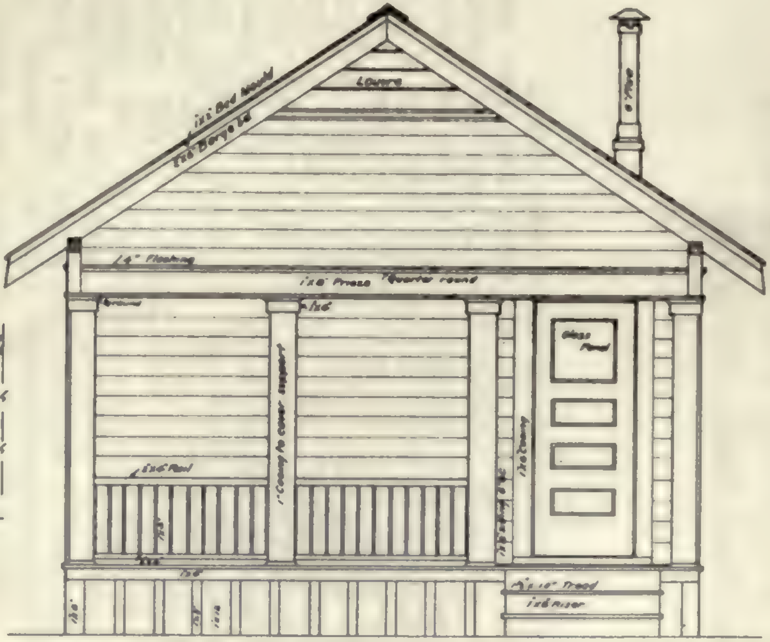


DETAIL OF WINDOW FRAME

DETAIL OF OUTSIDE DOOR FRAME

Scale

Note Sill and jambs of both doors and windows to be made narrower if rustic or boards and battens are used for outside cover



FRONT ELEVATION

Scale

PLAN No.10
OFFICE & STORE ROOM
16' 0" X 26' 0"
U. S. FOREST SERVICE
DISTRICT No. 5

PLAN NO. 1-C

OFFICE AND STOREROOM

16' x 28' porch included

Items preceded by the mark (*) are standard and are not subject to change or choice. Conditions of the local lumber markets, and the isolation of certain building sites from markets carrying a varied stock of lumber are factors which will govern selection of the type of outside and inside wall cover, trim and sizes and kinds of nails. Elevation of the particular building site will determine the slope of roof to use and the dimensions of the roof frame material to order. All items subject to change or choice are indicated by the mark (#). To prepare a complete order list, select the items marked (#) which, under the particular circumstances, will be best adapted for use at a given building site. Add such items to those marked (*). To all items of lumber add the specifications shown under "Grade and Species", and "Finish". For example, two pieces 4"x6"-16' No. 1 Common, redwood, cedar, Douglas fir or pine, rough. To all items of hardware add only such descriptive matter as is necessary to adequately describe each item. For example, 2 pounds 30d. common wire nails - 3 pounds 30d. fine galvanized wire nails. Do not show on the order list the purpose for which the hardware items are to be used.

Estimated cost of construction - labor at $4.00 per day - $ 130.00.

Builder's List of Materials.

Sills and Floor Joists

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
* 3	4 x 6 - 16	Sills	Redwood, cedar or Douglas fir	Rough	96
* 4	4 x 6 - 14	"	" " " " "	"	112
* 2	4 x 6 - 12	"	" " " " "	"	48
*13	2 x 6 - 16	Floor joists)	No. 2 Clear, D.F. 1st. Choice	(" or	208
* 4	2 x 6 - 12	" "end bridging		(sized	48
* 4	2 x 4 - 16	Porch floor joists)	No. 1 Clear, W.F.R.F. 2nd.F"	(if	43
* 1	4 x 6 - 12	Overhead porch supports)	No. 2 Clear, Y. P. 3rd. "	(practic- (able	24
* 1	4 x 6 - 16	Overhead porch supports)		((	32
* 2	6 x 6 - 16	Underpinning	Heart cedar or Redwood	Rough	96

Note:- The item underpinning includes sufficient material shown in plan. The actual amount needed will depend upon the slope of the ground of each particular building site. Make due allowance for this item in the lumber order. If split or round material is used, this item may be eliminated from the lumber list.

Studding, Plates, Girts, Etc.

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
* 1	6 x 6 - 16	Porch posts or corner studs	Same as joists	Rough or Sized	48
* 2	2 x 4 - 16	Porch posts (center)	" " "	" " "	22
*36	2 x 4 - 16	Studs, Walls & partitions	No. 1 Common, any species	(Rough	384
*16	2 x 4 - 16	Plates, top & bottom	" " " "	(or	171
* 6	2 x 4 - 12	" " "	" " " "	(sized	48
*12	2 x 4 - 16	False foundations, girts, gable studs & extras	" " " "	(if (prac-	128
*10	2 x 4 - 14	False foundations and trimmers, etc.	" " " "	(tic- (able	94
# 4	1 x 6 - 12	Diagonal bracing for house to carry heavy snow load			24

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft
		Wall Cover (Outside) Below Water Table (Standard regardless of cover above water table)			
*20	1 x12 - 16	Cover below water table	No. 1 Common, any species	Rough or S1S	320
*20	5/8x3 - 16	Battens	" " " "	" " S4S	80
* 4	1 x 3 - 16	Water table	No. 2 Clear, " "	" " S2S1E	16
* 4	1 x 4 - 16	Belt course under water table	No. 1 Common, " "	" " S4S	22

Note:- The first two items include sufficient siding for buildings having underpinning of the height shown on plan. The actual amount needed will depend upon the slope of the building site. Make due allowance for this item in the lumber order.

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft
# 624	B. F. 1 x 8	6" lap cover above water table	No. 1 Common, any species	Rough	624
		OR			
# 600	B. F. 6"or8"	Rustic above water table	"C" Grade, California, any species or No. 3 Clear, Oregon, D. F.		600
		OR			
# 280	B. F. 1 x 4	Sheeting for shingles above water table	No. 2 Common, any species	"	280
#3750	- -	Shingles, 5" to weather, above water table	Star A Star, Red Cedar		

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
		Roof Frame and Cover, 1/4 Pitch, 2' Eaves and Gable Projections (Elevations up to 2000 feet)			
#15	2 x 4 - 16	Ceiling joists	Same as floor joists	Rough	160
#30	2 x 4 - 12	Rafters 2' O.C.	" " " "	"	240
# 2	1 x 8 - 14	Ridge pole	No. 1 Common, any species	"	19
# 4	1 x 6 - 16	Collar beams	Same as floor joists	"	16
# 4	1 x 6 - 12	Rafter ties to joist near plate	No. 1 Common, any species	"	24
#300	B. F. 1x 4	Sheeting (Roof) 8" O.C. except eaves	No. 2 " " "	"	300
#6000	- -	Shingles (Roof) 4½" to weather	Star A Star, Red Cedar		
# 4	1 x 6 - 16	Saddle boards	No. 1 Common, any species	"	32
# 8	1 x12 - 16	Sheeting, 2' rafter projection	" " " "	Rough or S1S	128
# 4	2 x 6 - 12	Barge boards	" " " "	" " S4S	48
# 4	1 x 2 - 12	Barge board trim	No. 2 Clear, " "	" " "	8
# 4	1 x 6 - 12	Frieze boards gable ends	No. 1 Common " "	" " "	24
# 4	1 x 4 - 14	Rafter frieze (between rafters)	" " " "	" " S1S	19
# 8	1 x10 - 12	Soffit for gable projection	" " " "	" " "	80
# 1	2 x 8 - 16	Sills for louvre	" " " "	" " S4S	22
# 2	1 x 8 - 16	Jambs and slats for louvre	" " " "	" " S1S	22

Note:- The preceding 8 items are listed rough or surfaced, etc., if rough lumber wall cover is used all will be rough; if rustic or drop siding wall cover is used, order surfaced as indicated. If shingle wall cover is used, ordinarily these items will be rough, but occasion may arise where preferable to surface as indicated. Substitute milled bed mould for barge trim when rustic wall cover is used, and add 4 pieces 12 feet long of 1" 1/4 round moulding for frieze trim.

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
		Roof Frame and Cover, 1/4 Pitch, 2'Eaves and Gable Projections- Continued (Elevations up to 2000 feet)			
#100 B. F.	1 x 8	Sheeting 6" to weather gable ends	No. 1 Common, any species	Rough	100
		OR - If rustic or drop siding wall cover is used -			
#100 B. F.	6"or8"	Rustic or drop siding gable ends cover	"C" Grade,California, any species or No.3 Clear, Oregon D. F.		100
		OR - If shingle wall cover is used			
# 52 B. F.	1 x 4	Sheeting for shingle gable ends	No. 2 Common, any species	"	52
#750	-	- Shingles, 5" to weather, gable ends	Star A Star, Red Cedar		

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
		Roof Frame and Cover, 1/3 Pitch, 18" Eaves and Gable Projection (Elevations between 2000 and 3500 feet)			
#15	2 x 6 - 16	Ceiling joists	Same as floor joists	Rough	240
#30	2 x 6 - 12	Rafters 2' O.C.	" " " "	"	360
# 2	1 x 8 - 14	Ridge pole	No.1 Common, any species	"	20
# 8	1 x 6 - 16	Collar beams	Same as floor joists	"	64
# 8	1 x 6 - 16	Angle struts (°)	" " " "	"	64
# 4	1 x 6 - 16	King struts (°)	" " " "	"	32
# 8	1 x 6 - 14	Rafter ties to joist near plate (°)	No.1 Common, any species	"	56
#320	B. F. 1x4	Sheeting (Roof) 8" O.C. except eaves	No. 2 " " "	"	320
#6000	- -	Shingles (Roof) 4½" to weather	Star A Star, Red Cedar		
# 4	1 x 6 - 16	Saddle boards	No.1 Common, any species	"	32
# 8	1 x12 - 16	Sheeting 18" rafter projection	" " " "	" or S1S	128
# 4	2 x 6 - 12	Barge boards	" " " "	" " S4S	48
# 4	1 x 2 - 12	Barge board trim	No.2 Clear, " "	" " "	8
# 4	1 x 6 - 12	Frieze boards gable ends	No.1 Common, " "	" " "	24
# 4	1 x 6 - 14	Rafter frieze (between rafters)	" " " "	" " S1S	28
# 4	1 x 8 - 12	Soffit for gable projection	" " " "	" " "	32
# 4	1 x 6 - 12	" " " "	" " " "	" " "	24
# 1	2 x 8 - 16	Sills for louvre	" " " "	" " S4S	43
# 2	1 x 8 - 16	Jambs and slats for louvre	" " " "	" " S1S	22

Note:- The preceding 9 items are listed rough or surfaced, etc., if rough lumber wall cover is used all will be rough; if rustic or drop siding wall cover is used, order surfaced as indicated. If shingle wall cover is used, ordinarily these items will be rough, but occasion may arise where preferable to surface as indicated. Substitute milled bed mould for barge trim when rustic wall cover is used, and add 4 pieces 12 feet long of 1" 1/4 round moulding for frieze trim.

Roof Frame and Cover, 1/3 Pitch, 18" Eaves and Gable Projections - Continued.
(Elevations between 2000 and 3500 feet)

At elevations where snowfall is less than two feet, the items after which the mark (°) appears should not be ordered or used.

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
# 120 B. F.	1 x 8	Sheeting 6" to weather gable ends	No.1 Common, any species	Rough	120
	-	OR - If rustic or drop siding wall cover is used -			
# 115 B. F.	6"or8"	Rustic or drop siding gable ends cover	"C"Grade California, or No.3 Clear,Oregon D.F.		115
		OR - If shingle wall cover is used -			
# 60 B. F.	1 x 4	Sheeting for shingle gable ends	No. 2 Common, any species	"	60
#1000	-	- Shingles, 5" to weather	Star A Star, Red Cedar		

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd. Ft.
		Roof Frame and Cover, 1/2 Pitch, 18" Eaves and Gable Projections (Elevations over 3500 feet)			
# 15	2 x 6 - 16	Ceiling joists	Same as floor joists	Rough	240
# 30	2 x 8 - 14	Rafters 2' O.C.	" " " "	"	560
# 2	1 x10 - 14	Ridge pole	No.1 Common, any species	"	28
# 3	1 x 8 - 16	Collar beams	Same as floor joists	"	32
# 8	1 x 6 - 14	Rafter ties to joist near plate	No.1 Common, any species	"	56
#364 B. F.	1 x 4	Roof sheeting 8" O.C. except eaves	No.2 Common, any species	"	364
#6250	- -	Roof shingles, 5" to weather	Star A Star, Red Cedar		
# 4	1 x 6 - 16	Saddle boards	No. 1 Common, any species	"	32
# 8	1 x12 - 16	Sheeting 18" rafter projection	" " " "	"or S1S	128
# 4	2 x 8 - 14	Barge boards	" " " "	" " S4S	75
# 4	1 x 2 - 14	Barge board trim	No. 2 Clear, " "	" " "	10
# 4	1 x 8 - 12	Frieze boards gable ends	No.1 Common " "	" " "	32
# 4	1 x 8 - 14	Rafter frieze (between rafters)	" " " "	" " S1S	38
# 4	1 x 8 - 14	Soffit for gable projection	" " " "	" " "	38
# 4	1 x 6 - 14	Soffit for gable projection"	" " "	" " "	28

Note:- The preceding 7 items are listed rough, or surfaced, etc., if rough lumber wall cover is used all will be rough; if rustic or drop siding wall cover is used, order surfaced as indicated. If shingle wall cover is used, ordinarily these items will be rough, but occasion may arise where preferable to surface as indicated. Substitute milled bed mould for barge trim when rustic wall cover is used, and add 4 pieces 14 feet long of 1" 1/4 round moulding for frieze trim.

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
Roof Frame and Cover, 1/2 Pitch, 18" Eaves and Gable Projections - Continued (Elevations over 3500 feet)					
# 200 B. F.	1 x 8	Sheeting 6" to weather gable ends	No. 1 Common, any species	Rough	200
		OR - If rustic or drop siding wall cover is used -			
# 180 B. F.	6"or8"	Rustic or drop siding gable ends cover	"C" Grade, Calif, any species or No.3 Clear, Oregon D.F.		180
		OR - If shingle wall cover is used -			
# 90 B. F.	1 x 4	Sheeting for shingle gable ends	No. 2 Common, any species	"	90
# 1250	-	- Shingles, 5" to weather gable ends	Star A Star, Red Cedar		
		No louvre for buildings with 1/2 pitch roof.			

No. Pcs.	Size	Purpose & Location		Grade and Species	Finish	Bd.Ft.
	Outside Trim.					
# 1	4 x 4 - 20	For 4 brackets	(For 1/4 & 1/3	No.1 Common, any species	Rough-S4S	27
# 1	2 x 4 - 12	" 4 "	(Pitch Roof	" " " "	" "	8
	OR					
# 1	4 x 4 - 16	" 6 "	(For 1/2	" " " "	" "	22
# 1	4 x 4 - 14	" 6 "	(Pitch	" " " "	" "	19
# 1	2 x 4 - 14	" 6 "	(Roof	" " " "	" "	10
* 4	1 x 6 - 14	Corner Boards		" " " "	" "	28
* 2	1 x 6 - 20	" "		" " " "	" "	20

Note:- With rough lumber and shingle wall cover, order above 7 items rough; and surfaced as indicated with rustic or drop siding wall cover; Four brackets on 1/4 and 1/3 pitch roofs with louvres at both ends. Six brackets on 1/2 pitch roof - no louvres.

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
	Porch Material				
* 22	1 x 4 - 16	Porch floor, Vertical Grain	No. 2 Clear, T & G, any species		118
# 32	1 x 4 - 16	Porch ceiling and short walls	No. 3 Clear, T & G, any species		171
		OR - If rough lumber is used -			
# 9	1 x12 - 14	Ceiling and short walls	No.1 Common, any species	Rough or S1S	126
# 9	5/8x3 - 14	" " " wall battens	" " " "	" " S4S	32
* 4	1 x 6 - 14	Porch post finish	" " redwood or pine	" " "	28
* 4	1 x 8 - 14	" " "	" " " " "	" " "	38
* 1	1 x 8 - 12	" frieze	" " " " "	" " "	8
* 1	1 x 8 - 18	" "	" " " " "	" " "	12
* 2	1 x 8 - 16	" soffit	" " " " "	" " "	22
* 2	1 x 4 - 16	" trim or skirt	" " " " "	" " "	11
# 90	Lin. feet	1" 1/4 round for T & G finish (corner fillers)			
		OR			
# 90	" "	1"x1" strips for rough lumber finish	No. 2 Clear, any species	" " "	10
* 1	2 x 6 - 18	Top hand rail	No.1 Common, D.F., R.W., Y.P.	" " "	18
* 1	2 x 4 - 18	Bottom " "	" " " " "	" " "	12
* 6	1 x 4 - 14	Balusters	" " , any species	" " "	28
	Steps.				
* 1	1½x10 - 16	Treads	No. 2 Clear, D. F. or Y. P.	" " "	20
* 1	1 x 8 - 16	Risers	" " " " "	" " "	11
* 1	1 x12 - 12	Stringers	No. 1 Common, " " "	" " S1S	12
	Flooring.				
* 62	1 x 4 - 16	Flooring, T&G, vertical grain	No. 2 Douglas fir (Clear)		331
* 17	1 x12 - 12	" storeroom	No. 2 Clear, D. F. or Y.P.	Rough	204

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
		Inside Walls and Ceiling Cover Office - choice of			
# 16	1 x12 - 12	Ceiling (Office)	No. 1 Common, any species	Rough or S1S	192
# 18	5/8x3 - 12	" " battens	" " R.W.,C.orY.P.	" " S4S	48
# 24	1 x12 - 16	Wall cover	" " any species	" " S1S	384
# 28	5/8x3 --16	" " battens	" " R.W.,C.orY.P.	" " S4S	96
		OR			
#700	B. F. 1 x 4	T & G cover (walls and ceiling	No. 3 Clear, any species		700
		OR			
#670	B. F. 8"	Shiplap cover (walls and ceiling)	No.3 " " "		670
		Storeroom -			
* 16	1 x12 - 12	Ceiling (Storeroom)	No. 1 Common, any species	Rough	192
* 16	5/8x3 - 12	" battens	" " " "	"	48
* 19	1 x12 - 16	Wall cover (Storeroom)	" " " "	"	304
* 19	5/8x3 - 16	" " battens "	" " " "	"	76
		Inside Trim.			
#200	Lin. feet	1" 1/4 round (Corner fillers)			
#160	" "	1"x1" strips	No. 2 Clear, any species	Rough or S4S	90
* 4	1 x 6 - 12	Baseboards	" " Y. P.	S4S	24
		Shelving in storeroom			
* 10	1 x12 - 16		No. 1 Common, Y. P. or R.W.	Rough	160
* 4	1 x 6 - 16		" " " " "	"	32

	No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
			Window and Door Frames - Complete including outside and inside casing, stops, blind stops, parting strip, aprons and stool - if made on the job.			
#	1	2 x10 - 14	Sills (If 1 x 8 lapped siding)	No. 2 Clear, D.F.or Y.P.	S1S[o]	24
#	1	2 x 8 - 14	" (If rustic or shingles)	" " " " "	S1S[o]	19
#	4	1 x 8 - 16	Jambs (If 1 x 8 lapped siding)	No.2 Clear,R.W.,C.or Y.P.	S1S[o]	43
#	4	1 x 6 - 16	"(If(rustic or shingles)	" " " " " "	S1S[o]	32
#	4	1 x 6 - 16	Outside casing	No. 2 Clear," " " "	S4S[o]	32
#	4	1 x 2 - 12	Blind stops	" " " " " "	S4S[o]	8
#	6	½ x 1 - 12	Parting strip	" " " " " "	S4S[o]	6
#	1	1 x 3 - 18	Jamb for interior door	" " " " " "	S1S[o]	5
#	6	1 x 4 - 16	Inside casings	" " " " " "	S4S[o]	32
#	2	1 x 4 - 14	Aprons and stools	" " " " " "	S4S[o]	10
#	4	½ x1½ - 16	16 ft. door and window stops			8

[o] If surfaced material is not available, order rough and if desirable to do so, surface by hand.

If mill or factory made frames can be purchased, it is advisable to buy them in lieu of the above material. See order list "Doors and Windows".

Mill Order List (Doors and Windows)

* 1 2'8" x 6'8" - 1½" Colonial, one light 24" x 26", 21 oz. glass, 3 cross panel door, (See Cut No. B. M. - 3)
* 1 2'6" x 6'8" - 1½" Colonial 5 cross panel door (See Cut No. B. M.-3)
* 2 2'6" x 4'6" - 1½" Lip rail, 2 light, 21 oz. glass windows (no weights) (See Cut No. B. M.-5)
* 1 2'6" x 3'0" - 1½" Lip rail, 2 light, 21 oz. glass windows (no weights) (See Cut No. B. M.-5)

Note:- If mill or factory made frames can be purchased, order

# 1 Frame for 2'8" x 6'8" - 1½" door, outside (with sill) Complete with inside and outside trim
# 1 Frame for 2'6" x 6'8" - 1½" door, interior (no sill) " " " " outside trim
# 1 Frame for 2'6" x 3'0" - 1½" lip rail window (no weights) " " " " outside trim
# 1 Double or Mullion frame for 2 - 2'6" x 4'6" lip rail windows - complete with inside and outside trim (no weights)

Note:- Specify thickness of walls for each door and window frame and submit with each order a blue print of Detail No. 6.
Specify 1" x 6" for outside casing and 1" x 4" for inside casing.

Office Cabinet (See Detail 6-C)

* 5 1 x12 - 16 No. 2 Clear, D. F., R. W., C, or Y. P. S 4 S 80
* 1 1½x12 - 8 " " " " " " " S 4 S 12
* 1 ½ x14 - 12 " " " " " " " S 4 S 14

Hardware List.

* 5# 30d. common wire, frame nails
* 20# 20d. " " " "
* 55# 10d. " " " "
* 8# 8d. " " " and shelving nails
* 23# 3d. fine galvanized shingle nails for roof
* 2# 2d. " " " " " over eaves, roof and flashing
* 1# 4d. finish interior use
* 8# 8d. casing nails; flooring and miscellaneous use
* 6# 10d. " " , frames and " "
# 15# 10d. common " for outside walls above water table if 1 x 8 lapped
# 14# 8d. " " " " " " " " if rustic
# 6# 8d. " " " " " " " " if shingles (sheeting)
# 10# 3d. fine galvanized" " " " " " if shingles
# 10# 8d. common nails if interior walls and ceiling are 1 x 12
# 8# 6d. casing nails " " " are T & G or shiplap
# 4# 6d. " " " " " " 1 x 12 (for battens)
* 3 Cupboard door catches #4300 AC
* 3 " " hinges # 1474 D-2 - 2"
* 2 Drawer pulls # 5074 AC
* 6 pr. Window spring bolts
* 2 " Half surface butts, 3½" #160 D-2 AC
* 2 Rim latches # 8052, knob # 9241
* 100 Lin. feet galvanized wire (30 gauge) flashing 4 in. wide

Note:- Numbers following items of hardware are Pacific Hardware & Steel Company's Catalogue numbers. See hardware list in Building Material Section.

FLUE MATERIAL.

The builder shall always submit Details No. 6-A or 6-B with orders for flue materials. This is important.

Irrespective of the pitch of roof, the articles following, before which the mark (*) appears, are to be ordered:

* 1 6" Terra Cotta bottom pipe or joint
* 1 6" " " straight joint
* 1 Galvanized iron (26 gauge) drip ferrule (See Cut)

1/4 Pitch Roof -

1 Galvanized roof plate, 26 gauge, with pipe projection to fit around 6" terra cotta pipe for 1/4 pitch roof (See Detail of District 5 Standard Flue)
5 Foot length, 26 gauge, galvanized pipe made so as to slide inside 6" terra cotta pipe. On bottom it shall be made to fit on to standard 6" black iron stove pipe. On its top shall be riveted a plain, convex storm hood of standard design.

1/3 Pitch Roof -

1 Galvanized roof plate, 26 gauge, with pipe projection to fit around 6" terra cotta
— pipe for 1/3 pitch roof (See Detail of District 5 Standard Flue)
6'4" Length, 26 gauge, galvanized pipe made so as to slide inside 6" terra cotta pipe. On bottom it shall be made to fit on to standard 6" black iron stove pipe. On its top shall be riveted a plain, convex storm hood of standard design.

1/2 Pitch Roof -

1 Galvanized roof plate, 26 gauge, with pipe projection to fit around 6" terra cotta pipe for 1/2 pitch roof (See Detail of District 5 Standard Flue)
9 Foot length, 26 gauge, galvanized pipe made so as to slide inside 6" terra cotta pipe. On bottom it shall be made to fit on to standard 6" black iron stove pipe. On its top shall be riveted a plain, convex storm hood of standard design.

* 1# Cement and 1.3# clean sand for each joint of terra cotta.

Where snow fall exceeds 30", install the flue protector shown in Detail No. 6-B. The builder shall all material necessary to build the protector.

Paint.

* 5 gal. Regulation outside body gray paint
* 2 " " " trim white "
* 5 " " " roof green "
* 1 " " floor paint
* 2 lbs. Putty
* 6 pcs. sand paper No. 1
# 1½ gal. Boiled linseed oil
# ½ " Turpentine
# 1 qt. Orange shellac

If Laird & Sinclair's paint is used, omit linseed oil and turpentine and add -

# 1 gal. Aroturps for each 5 gallons of outside paint on order list.

Note:- See Painting Section in this manual and for interior paints select choice and add quantity of paints or stains to the paint order list.

Cement.

See specifications for all concrete work if concrete foundations are practicable for this building.

OFFICE AND STOREROOM

Note:- This building is designed for construction and use at ranger stations where the need for a house and work shop does not justify the construction of a separate building for that purpose.

For additional specifications see following pages.

SPECIFICATIONS

FOR

PLAN 1-C OFFICE AND STOREROOM
16' x 28' porch included

PLAN 1-D ONE ROOM OFFICE
16' x 20'

PLAN 1-E TWO ROOM OFFICE
(OFFICE AND BEDROOM)
16' x 24'

PLAN 1-F OFFICE AND KITCHEN
18' x 26'

These specifications are intended to embrace all material necessary in the erection and completion of the building in all its parts, and to furnish such instructions as appear necessary to give the builder a general idea of the plan. Variations due to different locations and accessibility of lumber markets have been considered and estimates prepared accordingly.

The general plan as regards construction of frame and other vital parts of the structures is to be followed unless permission to deviate from the plans and specifications has first been secured from the District Forester. Deviations of minor consequence, however, may be made by the builder to take care of unforeseen local conditions and circumstances.

EXCAVATION.

Excavation for the foundation of the building shall be carried down to solid earth. The bottom of the excavation shall be level and smooth. When necessary to grade into unlevel ground for the purpose of providing a level building site, the slopes of the excavation resulting must clear the sides of the building by at least 3 feet. If necessary, provision should be made to prevent earth caving from the embankment from contacting with the sills and foundation posts if of wood.

FOUNDATIONS.

Foundations should be either of-

(a) 6"x6" heart cedar, redwood or Douglas fir underpinning, set upon substantial flat stones of sufficient thickness to project at least 4 inches above the ground. Wood blocks should never be used for footings under foundation posts.

(b) If substantial stones are not available, provide a masonry or concrete footing. For masonry use only hard stones, preferably flat ones. All should be carefully imbedded on their broadest faces in mortar of 1 part cement and 2 parts coarse, clean, sharp sand. Each layer should be well filled and flushed up on both sides and firmly bonded together. The tops should be made level to receive the underpinning. See Table No. C-4.

(c) Large stones of sufficient thickness to raise the sill to a height of at least 12 inches above the ground.

(d) Blocks of masonry or concrete at least 12 inches high, 10 inches wide on top and 16 inches square at the bottom. The top of concrete and masonry blocks should be made level to receive the sills. See Concrete Section, and Table No. C-4.

(e) If water and sewer pipes are to be placed under a building, foundation blocks or underpinning must be at least 24 inches high.

MATERIALS.

All structural materials should conform as closely as possible to the specifications given in the builder's list and lumber order list. That minor deviations must some times be made is recognized as unavoidable.

SILLS.

Should preferably be of cedar or redwood. Douglas fir may be used as a second choice.

Set rectangular sills with narrow edge up.

Sills at corner should be halved together. When two or more pieces are necessary to form the total length of sill a splice should be made on the foundation supports, as indicated on the plan (See Cut No.B.M.9)

Two or more joints should not occur on the same line of foundation posts. Arrange to have the splices made over foundation posts of different sets.

ROOF.

Materials for roofs at different elevations are provided. At elevations within the ranges mentioned use the roofs of stated pitches. Exception to the above should occur only where snowfall is not a source of hazard as on some of the southern Forests and on the Modoc.

Rafters and other members of the roof frame should be of selected straight grain lumber; 1st choice Douglas fir, 2nd choice white fir, 3rd choice yellow pine, free from knots and other imperfections. Too much attention cannot be given the selection of the best sticks of the lumber order for rafters.

Where roof trusses are used fasten the members securely with 10d nails in members one inch thick and with 20d, nails in members two inches thick.

Care should be taken to cut the rafters true in order that they rest firmly on the plate and meet squarely at the apex of the roof.

Roof projections should be sheathed solid with 1"x12" rough or dressed lumber.

Rafter ends should be finished in the manner illustrated by the diagram "Section".

Use for roof covering either-

(1) Star A Star red cedar or redwood shingles

(2) Shakes of white fir or sugar pine

(3) Lay shingles 4½" to weather on sheeting 8 inches on center. Nail them with 3d. fine galvanized shingle nails. Lay the bottom course of shingles double and project it 1½ inches beyond the sheeting. Allow a 1 inch projection of shingles over the barge board trim. Table No. B.M.-2 gives data on shakes. If shakes are used allow 1½ inches projection at eaves and 1 inch projection over barge board trim.

The ridge of the roof should be finished with 1"x6" boards.

FLOOR JOISTS, STUDDING, BRIDGING, ETC.

To have all joists and studs sized or made even in width is desirable. Where practicable to have material sized, do so. If impracticable, rough material may be used. To size it by hand may be necessary. Joists should be of selected sticks, straight grain and free from all knots larger than 1 inch in diameter; 1st. choice being Douglas fir, 2nd. choice white fir, 3rd. choice yellow pine. Studding, headers, trimmers, plates, etc., may be of any straight grain material free from loose knots and knots which materially weaken the stick. Lay floor joists directly upon the sills. Where two joists form the span, use the lap joint; in all cases--place the bow of the joists up. Place solid 2"x6" bridging at the ends of each joist. If span exceeds 12 feet, place 2"x4" cross bridging in the center. (See Cut No. B.M.-9)

Lay the floor first. Then, place floor plates for both inside and outside walls on top of it.

Make corner studs of 2"x4" scantling spiked together. (See Plan) The corner posts should be assembled before installing them. Place studs on top of floor plates. Double the top plates. In splicing, lap them, at least 4 feet and arrange to have the ends of the lap fall over studs.

Double headers over window openings and door openings. If shingle siding is used, double trimmers also.

Place girts of 2"x4" scantling horizontally in all outside walls midway between the top and bottom plates.

Place girts of the same size as the studding for backing for the outside skirt parts. (See Plan)

At elevations of 3000 feet and over brace the studs with 1"x6" piece cut into the studs, to such a depth that the outside faces of the braces are flush with the outside face of the studs. (See Cut No. B.M.-9)

Place ceiling joists directly over plates. Nail them securely to the rafters and nail them to the plate. If the building will be subject to snow load for ceiling joists, give particular care to the selection of good straight grain sticks free from knots larger than 1 inch in diameter and other imperfections, that would weaken the stick. Use five 20d. wire nails for nailing the ceiling joist to the rafters and two 20d. wire nails to toe nail them to the plate.

SIDING.

The plan illustrates the method to follow in placing siding. Note the break at the line of the lowest window sill. At that position place a 1"x4" water table around the building. (See plan). From the water table to the ground, place 1"x12" boards vertically with battens over cracks. Nail the board securely to the girts (see instructions under sills, joist, etc.) with 3-10d. nails at each nailing place. Fasten the battens with 6d. or 8d. nails set opposite one another on 12" centers. Clinch the nails on the inside. The amount of material required for this base siding will depend upon height of underpinning, which in turn depends upon slope of site. The material as listed contains sufficient siding to cover base of the height measurement shown in the plan. If more or less is needed for a given building, the builder should make allowances accordingly.

As available and as circumstances might dictate, for siding above the water table, the builder may choose any style of siding included in the following list.

(a) Rough lumber 1"x8" laid horizontally with a lap of 2 inches. Boards must be free from loose knots, all knots tight or loose having a diameter greater than 1½", weather cracks, rot disfigurements and large pitch pockets. Set the first board at the bottom on a 1"x2" strip, which should be nailed to studs. Exercise care in spacing the siding in order that the lap of each board will be equal. Nail siding with 10d. nails at top and bottom into each stud.

(b) Rustic drop or bevel siding of C Grade

California material or 2 Grade Oregon. Nail siding with 2-8d. wire nails at each stud.

(c) Star A Star red cedar shingles placed 5" to weather on 1"x4" sheeting on 8". Nail shingles with 3d. fine galvanized nails.

In placing sheeting for shingle walls cut back the sheeting the width of the door and window casing. Before placing sheeting study the Detail 6-D showing door and window frames where shingles are used.

Before placing siding above the water table insert 30 gauge galvanized iron flashing over the water table and against the studs. Place the siding over the flashing. Also flash over each window frame and exposed door frame.

PORCH AND STEPS.

Construct porches as shown by the plan.

In all cases give porch floor a slope of 1/4" per foot of run, to assure proper drainage.

The amount of material for steps will depend upon the height of the underpinning used, which in turn will depend upon the slope of the site. The builder should keep this in mind and if more or less material is needed, than included in the material lists, due allowance should be made. Sufficient material for steps is included for underpinning of the height shown in the plan.

Always place step rises on footings of stones. Meet step risers to stringers. Nail steps securely to both risers and stringer.

LOUVRE BRACKETS AND BARGE BOARDS.

At elevations where snowfall is light, louvres located in each gable end may be installed. Do not install louvres in regions where snowfall is heavy. Brackets and barge boards should be installed as delineated in drawings. Note that the material lists provide more brackets for roofs designed to carry heavy snow loads than for roofs that will not.

INSIDE FINISH.

Any accessible kind of inside finish may be used, preferably shiplap or beaded or plain ceiling. When ordering from California mills specify "C" grade; when ordering from Oregon mills or yard specify "No. 3 Clear". When milled lumber is not available, dressed or rough lumber with 3/8" x 2" or 1/2" x 2" strips, over cracks, may be used. A 1"x6" base should be extended around each wall.

MOULDING.

Place moulding in all corners.

1st. choice - 7/8"x7/8" quarter round.
2nd. " - 3-corner moulding.
3rd. " - dressed or rough strips 1"x1"
4th. " - 1/2"x2" battens.

FLUES.

See Details No. 6-A and 6-B. In regions where snowfall is deeper than 2½ feet, if the flue is installed 3 feet or more from the apex of the roof, place the protector shown in Detail 6-B back of the flue. In placing joints of pipe below the roof line see to it that they are so spaced that the joints passing through the roof will be set as shown in the drawing. In some cases, to accomplish the proper position of the joint which passes through the roof, one of the lower joints will have to be cut. Excepting where the bottom joint rests upon its support, the terra cotta should not be closer than 1½" to wood work. Guy the top of the flue securely with three guys of No. 9 or No. 12 telephone wire. Place all flues before shingling the roof.

DOORS.

Order doors of the dimensions given on the plan and fit them with locks and hinges as given in the estimate.

DOORS AND WINDOWS.

Order doors and windows, and hardware for them, according to the specifications given in the material lists. Equip at least one outside door with Forest Service rim locks. Equip both upper and lower window sashes with two spring bolts. To accomodate the bolts provide 1/4" holes at desired height in the window jambs.

WINDOW AND DOOR FRAMES.

Buy factory made frames if practicable. If impracticable order the necessary material and make them on the job in accordance with the plans illustrated on Detail 6-D. Care should be exercised in placing the studding at all openings in order that the frames may be plumbed properly. Allow at least 1/2" play on each side, also on the top and on the bottom. Exercise care in setting the frames and see to it that they are set plumb and that they are properly centered. Flash over the windows with 4" No. 30 galvanized iron strips. Where rough board siding is used set the frame casings directly over the siding. Cover holes by notching 1"x2¼" strips alongside of casings.

CUPBOARDS AND CLOSETS.

Build cupboards according to Details shown in the plan and place them as shown in the floor plans.

Where an office cabinet is desired, build in accordance with plan shown in Detail 6-C.

Provide closets with two 1"x12" shelves and a 1" x 4" strip for wardrobe hooks. Place hooks on 18" centers.

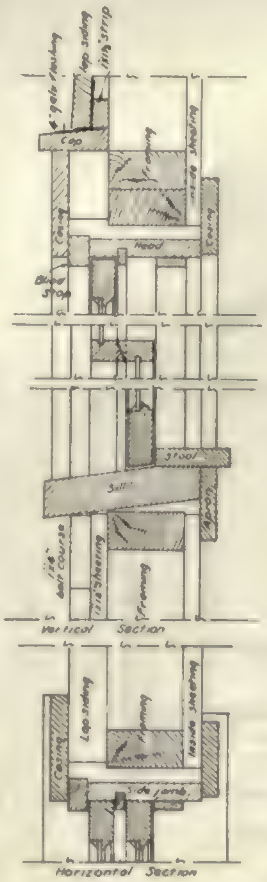
In Plan 1-F, the closet shown at the rear of the building on the left hand side of the large room is intended for the accomodation of a wall bed and closet combined. The wall bed takes up only 18" of space in depth.

PAINTING.

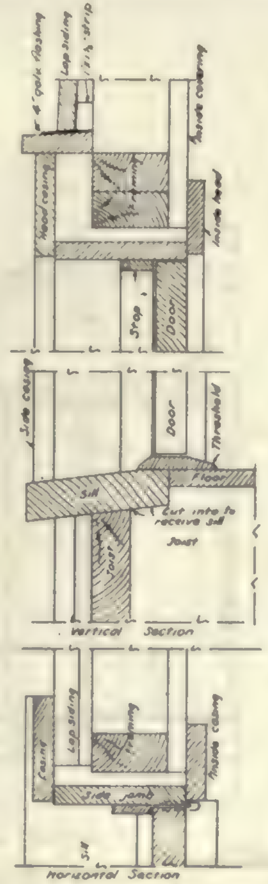
Color--Body - Standard Gray (2 coats)
Roof - " Green " "
Trim - " White " "
Inside-Any color satisfactory to
the occupant (2 coats)
Floor - Any color (3 coats)

If the lumber is dry, give the outside and roof a priming coat as soon as the siding is placed; put on the second coat as soon as the first is thoroughly dry. Do not apply paint if lumber is not thoroughly seasoned or if the surface is damp, from rains, fogs, frosts, etc. Before applying paint to knots, cover them tightly with a coat of shellac. Do not paint during damp weather. Before applying the paint to interior, the surface should be carefully cleaned. All nail holes should be filled with putty, colored to match finish. To have a real fine finish, sand the surface. (See paint section of the circular.)

The floor should receive three coats of floor paint.



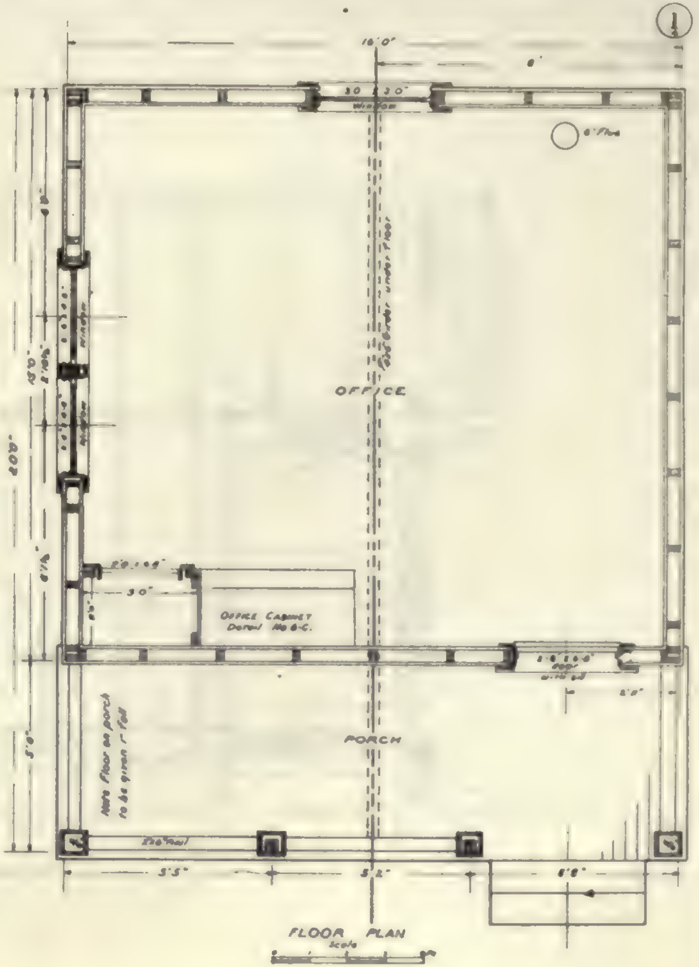
DETAIL OF WINDOW FRAME



DETAIL OF OUTSIDE DOOR FRAME

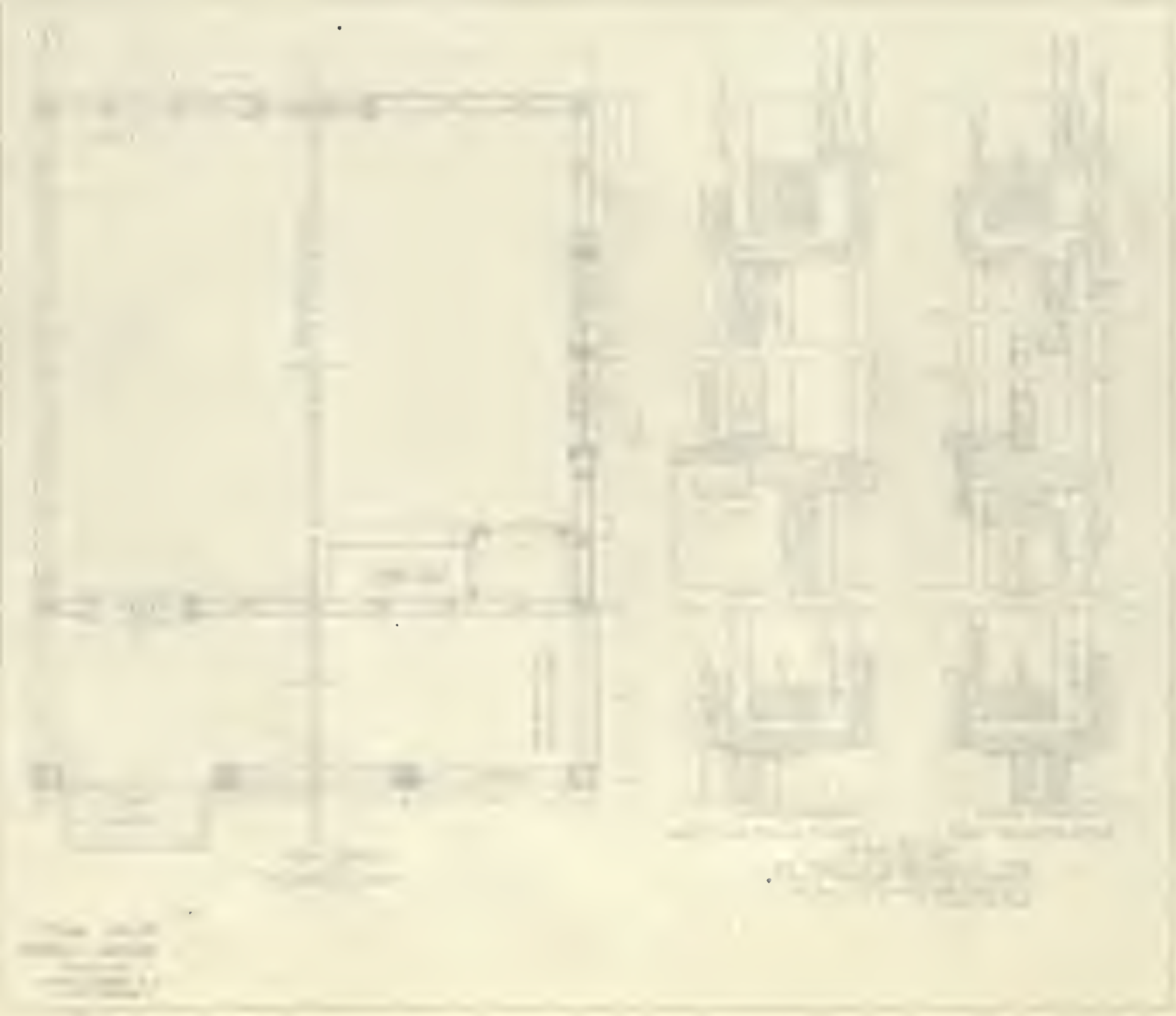
Scale

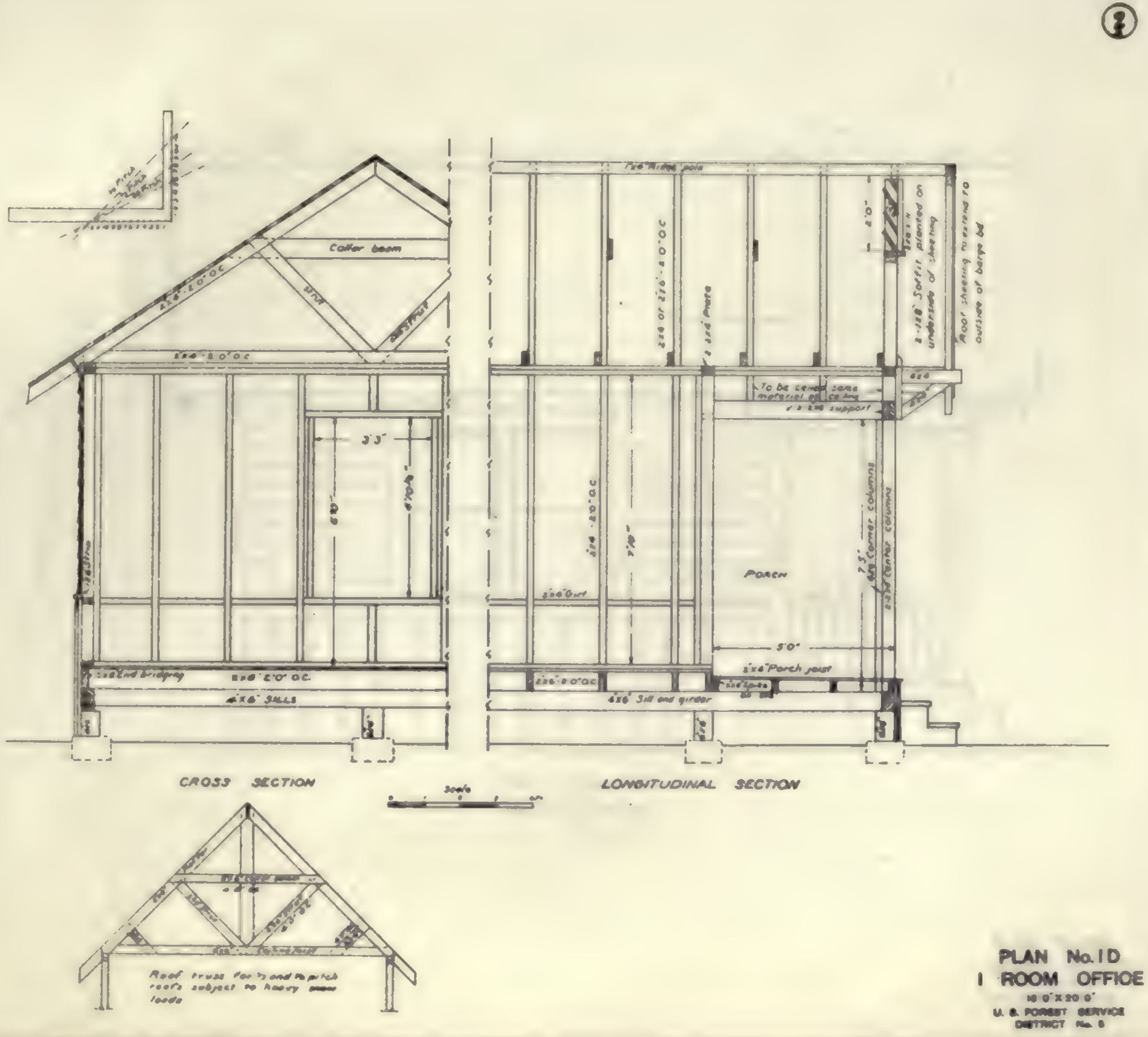
Note Sill and jambs of both door and windows to be made narrower if rustic or boards and battens are used for outside cover



FLOOR PLAN

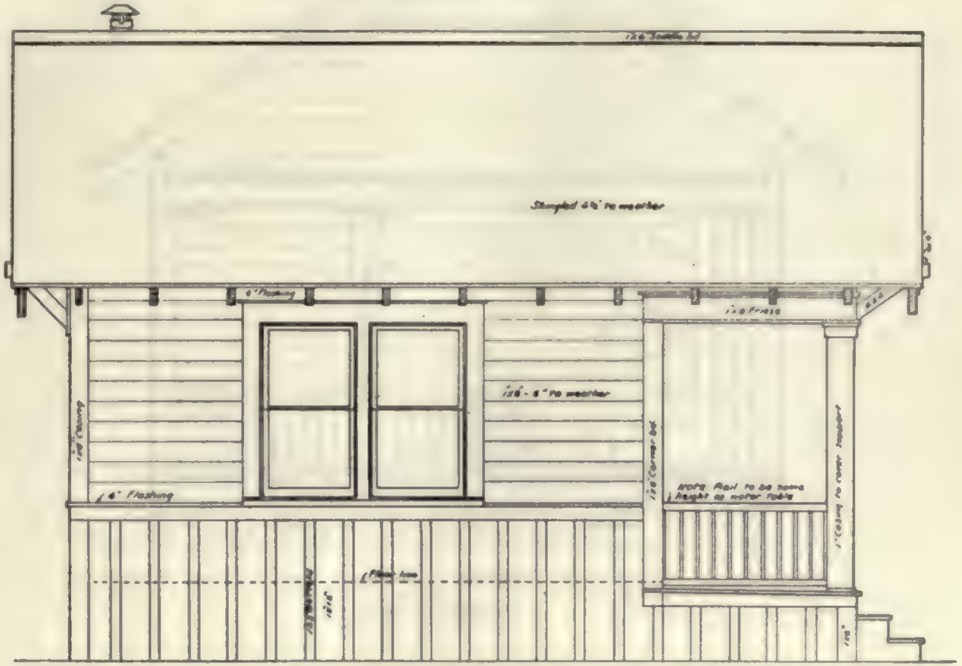
PLAN No. 1D
1 ROOM OFFICE
16'0" X 20'0"
U. S. FOREST SERVICE
DISTRICT No. 5





PLAN No. 1D
1 ROOM OFFICE
10'0" X 20'0"
U. S. FOREST SERVICE
DISTRICT No. 6

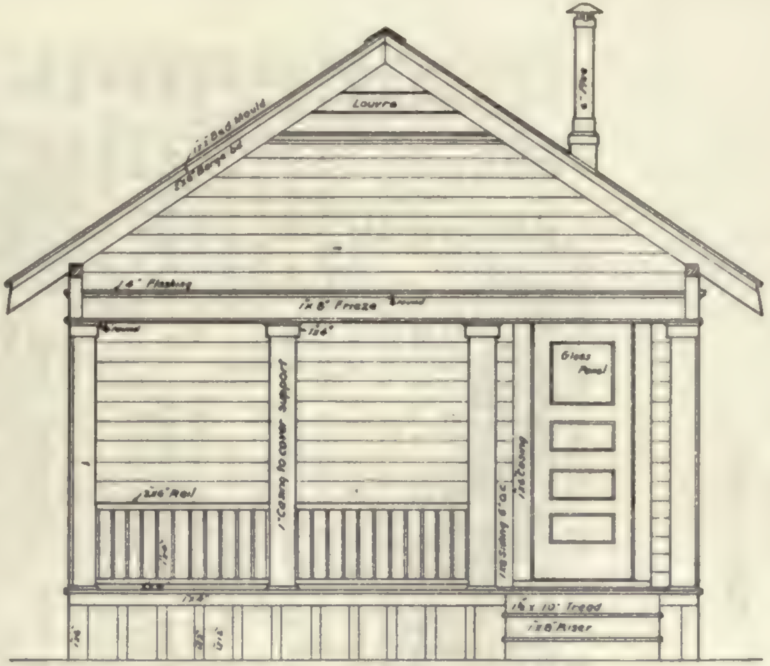
③



SIDE ELEVATION

Scale

PLAN No. 1D
1 ROOM OFFICE
16' 0" X 20' 0"
U. S. FOREST SERVICE
DISTRICT No. 5



FRONT ELEVATION

Scale
0 1 2 3 4 Ft

PLAN No. 1D
1 ROOM OFFICE
16'0" X 20'0"
U. S. FOREST SERVICE
DISTRICT No. 6

PLAN NO. 1-D

ONE ROOM OFFICE

16' x 20'

Items preceded by the mark (*) are standard and are not subject to change or choice. Conditions of the local lumber markets, and the isolation of certain building sites from markets carrying a varied stock of lumber are factors which will govern selection of the type of outside and inside wall cover, trim and sizes and kinds of nails. Elevation of the particular building site will determine the slope of roof to use and the dimensions of the roof frame material to order. All items subject to change or choice are indicated by the mark (#). To prepare a complete order list, select the items marked (#) which, under the particular circumstances, will be best adapted for use at a given building site. Add such items to those marked (*). To all items of lumber add the specifications shown under "Grade and Species", and "Finish". For example, two pieces 4"x6"-16' No. 1 Common, redwood, cedar, Douglas fir or pine, rough. To all items of hardware add only such descriptive matter as is necessary to adequately describe each item. For example, 2 pounds 30d. common wire nails - 3 pounds 30d. fine galvanized wire nails. Do not show on the order list the purpose for which the hardware items are to be used.

Estimated cost of construction - labor at $4.00 per day - $ 112.00.

Builder's List of Materials.

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft
		Sills and Floor Joists.			
* 2	4 x 6 - 12	Sills	Redwood, cedar or Douglas fir	Rough	48
* 5	4 x 6 - 16	"	" " " " "	"	160
* 9	2 x 6 - 16	Floor joist	)No.2 Clear, D.F., 1st. Choice	("	144
* 2	2 x 6 - 16	End bridging	)	(sized	32
* 4	2 x 4 - 16	Porch floor joists	)No.1Clear, W.F.R.F.2nd. "	(if	43
* 1	4 x 6 - 12	Overhead porch supports)		(practic-	24
* 1	4 x 6 - 16	" " "	)No.2 Clear, Y.P. 3rd. "	(able	32
* 2	6 x 6 - 12	Underpinning	Heart cedar or redwood	Rough	72

Note:- The item underpinning includes sufficient material shown in plan. The actual amount needed will depend upon the slope of the ground of each particular building site. Make due allowance for this item in the lumber order. If split or round material is used this item may be eliminated from the lumber list.

		Studding, Plates, Girts, Etc.			
* 1	6 x 6 - 16	Porch posts and corner studs	No.1 Common, D.F., W.F., R.F., Y.P.	(Rough (or	48
*22	2 x 4 - 16	Studding	No.1 Common, any species	(	213
* 6	2 x 4 - 12	Plates & floor plate	" " " "	(sized	48
*11	2 x 4 - 16	" " " "	" " " "	(if	117
* 4	2 x 4 - 16	Girts	" " " "	(	43
* 4	2 x 4 - 16	Window & door trimmers	" " " "	(practic-	43
* 5	2 x 4 - 16	False foundation frame	" " " "	(able	53
* 6	2 x 4 - 12	Miscellaneous	" " " "	(able	48
# 8	1 x 6 - 12	Diagonal braces for building subject to heavy snow load			48

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
Wall Cover (Outside) Below Water Table (Standard regardless of cover above water table)					
* 18	1 x12 - 16	Sheeting for base	No.1 Common, any species	Rough or S1S	400
* 280	Lin. Ft.	5/8 x 3 battens for base	" " " "	" " S4S	70
* 5	1 x 4 - 16	Belt course	" " " "	" " S4S	27
* 5	1 x 3 - 16	Water Table	No.2 Clear " "	" " S2S1E	20

Note:- The first two items include sufficient siding for buildings having underpinning of the height shown on plan. The actual amount needed will depend upon the slope of the building site. Make due allowance for this item in the lumber order.

Choice of -					
# 450	B.F. 1x8	Sheeting, 6" to weather (above water table)	No. 1 Common, any species	Rough	450
		OR			
# 450	B.F. 6"or8"	Rustic or dropsiding (above water table)	"C" Grade, California, any species or No. 3 Clear, Oregon, D. F.		450
		OR			
# 200	B.F. 1x4	Sheeting for shingles 8" O.C. (above water table)	No.2 Common, any species	"	200
#2500	- -	Shingles, 5" to weather (above water table)	Star A Star, Red Cedar		

Roof Frame and Cover, 1/4 Pitch, 2' Eaves and Gable Projections

(Elevations up to 2000 feet)

No. Pos.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
# 11	2 x 4 - 16	Ceiling joists	Same as floor joists	Rough	117
# 22	2 x 4 - 12	Rafters 2' O.C.	" " " "	"	176
# 2	1 x 4 - 12	Ridge pole	No.1 Common, any species	"	8
# 6	1 x 6 - 16	Collar beams	Same as joists	"	48
# 4	1 x 4 - 12	Rafter ties to joist near plate	" " "	"	16
#252	B.F. 1x4	Sheeting 8" o.c. except 2' rafter projection	No.2 Common, any species	"	252
#4500	- -	Shingles, 4½" to weather	Star A Star, Red Cedar		
# 3	1 x 6 - 16	Saddle boards	No. 1 Common, any species	"	24
# 6	1 x12 - 16	Sheeting, 2' rafter projection	" " " "	Rough or S1S	96
# 4	2 x 6 - 12	Barge boards	" " " "	" " S4S	48
# 4	1 x 2 - 12	Barge board trim	No. 2 Clear " "	" " S4S	8
# 4	1 x 6 - 12	Frieze boards	No. 1 Common, " "	" " S4S	24
# 3	1 x 6 - 12	Rafter end frieze between rafters	" " " "	" " S1S	12
# 1	2 x 8 - 16	Sills for louvre	" " " "	" " S4S	21
# 2	1 x 8 - 16	Louvre jambs and slats	" " " "	" " S1S	21
# 8	1 x10 - 12	Soffit for gable projection	" " " "	" " S1S	80

Note:- The preceding 8 items are listed rough or surfaced, etc., if rough wall cover is used these will be rough; if rustic or drop siding wall cover is used, order surfaced lumber as indicated. If shingle wall cover is used, ordinarily these items will be rough but occasions may arise where preferable to surface as indicated. Substitute milled bed mould for barge trim when rustic wall cover is used and add 4 pieces 12' long of 1" 1/4 round moulding for frieze trim.

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
		Roof Frame and Cover, 1/4 Pitch, 2' Eaves and Gable Projection - Continued (Elevations up to 2000 feet)			
# 100 B.F.	1 x 8	Sheeting, gable ends, 6" to weather	No. 1 Common, any species	Rough	100
		OR - If rustic or drop siding wall cover is used			
# 100 B.F.		Rustic or drop siding	No. 3 Clear, any species		100
		OR - If shingle wall cover is used			
# 52 B.F.	1 x 4	Sheeting, 8" O.C. for shingles	No. 2 Common, any species	"	52
# 750	-	Shingles, 5" to weather	Star A Star, Red Cedar		

Roof Frame and Cover, 1/3 Pitch, 18" Eaves and Gable Projections
(Elevations between 2000 - 3500 feet)

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd. Ft.
# 11	2 x 6 - 16	Ceiling joists	Same as floor joists	Rough	176
# 22	2 x 6 - 12	Rafters 2' O.C.	" " " "	"	264
# 2	1 x 8 - 12	Ridge pole	No.1 Common, any species	"	16
# 6	1 x 6 - 16	Collar beams (°)	Same as floor joists	"	48
# 4	1 x 6 - 14	Angle struts (°)	" " " "	"	28
# 4	1 x 6 - 12	King struts (°)	" " " "	"	24
# 4	1 x 6 - 12	Rafter ties to joist near plate	No.1 Common, any species	"	24
#270 B.F.	1 x 4	Sheeting (roof) 8" O.C. except 18" projection	No.2 " " "	"	270
#4750	- -	Shingles (roof) 4½" to weather	Star A Star, Red Cedar		
# 3	1 x 6 - 16	Saddle boards	No.1 Common, any species	"	24
# 6	1 x12 - 16	Sheeting 18" rafter projection	" " " "	Rough or S1S	96
# 4	2 x 6 - 12	Barge boards	" " " "	" " S4S	48
# 4	1 x 2 - 12	Barge board trim	No.2 Clear " "	" " S4S	8
# 4	1 x 6 - 12	Frieze boards	No.1 Common, " "	" " S4S	24
# 3	1 x 4 - 12	Rafter frieze between rafters	" " " "	" " S1S	12
# 1	2 x 8 - 16	Sills for louvre	" " " "	" " S4S	21
# 2	1 x 8 - 16	Louvre jambs and slats	" " " "	" " S1S	21
# 4	1 x 6 - 12	Soffit for gable projection	" " " "	" " S1S	24
# 4	1 x 8 - 12	Soffit for gable projection	" " " "	" " S1S	32

Note:- The preceding 9 items are listed rough or surfaced, etc., if rough lumber wall cover is used these will be rough; if rustic or drop siding wall cover is used order surfaced lumber as indicated. If shingle wall cover is used ordinarily these items will be rough, but occasions may arise where preferable to surface as indicated. Substitute milled bed mould for barge trim when rustic wall cover is used and add 4 pieces 12" long of 1" 1/4 round

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
		Roof Frame and Cover, 1/3 Pitch, 18" Eaves and Gable Projections - Continued (Elevations between 2000 - 3500 feet)			
		moulding for frieze trim.			
# 120 B.F.	1 x 8	Sheeting gable ends 6" to weather	No.1 Common, any species	Rough	120
		OR - If rustic or drop siding wall cover is used -			
# 115 B. F.		Rustic or drop siding (gable ends)	(No.3 Clear, Oregon D.F. or ("C" Grade, California, any species		115
		OR - If shingle wall cover is used -			
# 60 B. F.	1 x 4	Sheeting, 8" O. C. for shingles	No.2 Common, any species	Rough	60
# 1000 -	-	Shingles, 5" to weather	Star A Star, Red Cedar		

(°) At elevations where snowfall is less than 2 feet the items after which the mark (°) appears should not be ordered or used.

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd. Ft.
Roof Frame and Cover, 1/2 Pitch, 18" Eaves and Gable Projections (Elevations over 3500 Feet)					
# 11	2 x 6 - 16	Ceiling joists	Same as floor joists	Rough	176
# 22	2 x 8 - 14	Rafters 2' O. C.	" " " "	"	411
# 2	1 x10 - 12	Ridge pole	No.1 Common, any species	"	20
# 5	1 x 8 - 16	Collar beams	Same as floor joists	"	54
# 4	1 x 6 - 12	Rafter ties to joist near plate	No.1 Common, any species	"	24
#290	B. F. 1 x 4	Sheeting (Roof) 8" O.C. except 18" eaves	No.2 Common, any species	"	290
#5500	- -	Shingles, 4½" to weather (Roof)	Star A Star, Red Cedar		
# 3	1 x 6 - 16	Saddle boards	No. 1 Common, any species	"	24
# 6	1 x12 - 16	Sheeting, 18" rafter projection	" " " "	Rough or S1S	96
# 4	2 x 8 - 14	Barge boards	" " " "	" " S4S	75
# 4	1 x 2 - 14	Barge board trim	No.2 Clear, " "	" " S4S	9
# 4	1 x 8 - 12	Frieze boards (gable)	No.1 Common, " "	" " S4S	32
# 3	1 x 8 - 12	Rafter Frieze (between rafters)	" " " "	" " S1S	24
# 4	1 x 6 - 12	Soffit for gable projection	" " " "	" " S1S	24
# 4	1 x 8 - 12	Soffit for gable projection	" " " "	" " S1S	32

Note:- The preceding 7 items are listed rough or surfaced, etc., if rough lumber wall cover is used these will be rough; if rustic or drop siding wall cover is used order surfaced lumber as indicated. If shingle wall cover is used ordinarily these items will be rough, but occasions may arise where preferable to surface as indicated. Substitute milled bed mould for barge trim when rustic wall cover is used and add 4 pieces 12' long of 1" 1/4 round moulding for frieze trim.

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
		Roof Frame and Cover, 1/2 Pitch, 18" Eaves and Gable Projections - Continued (Elevations over 3500 feet)			
#200	B. F. 1 x 8	Sheeting, 6" to weather, gable ends	No. 1 Common, any species	Rough	200
		OR - If rustic or drop siding wall cover is used -			
#180	B. F.	Rustic or drop siding, gable end cover	"C" Grade, California, any species or No.3 Clear, Oregon D.F.		180
# 90	B. F. 1 x 4	Sheeting, for shingles gable ends	No.2 Common, any species	Rough	90
#250	- -	Shingles, 5" to weather	Star A Star, Red Cedar		

No louvre for building with 1/2 pitch roof - brackets in place of louvre.

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd. F
	Outside Trim.				
* 2	4 x 4 - 16	Brackets for gables	No. 1 Common, any species	Rough or S4S	43
* 1	2 x 4 - 18	" " "	" " " "	" " "	8
* 2	1 x 6 - 14	Corner boards	" " " "	" " "	14
* 2	1 x 6 - 20	" "	" " " "	" " "	20
Note:-		For rough lumber and shingle wall finish, order above 4 items rough and surfaced for rustic or drop siding wall cover. Four brackets on 1/4 and 1/3 pitch roof with louvres both ends; six brackets on 1/2 pitch roof, no louvres.			
	Porch Material.				
* 22	1 x 4 - 16	Flooring, vertical grain	No. 2 Clear, T & G, any species		118
# 32	1 x 4 - 14	Ceiling & short walls	No. 3 Clear, T & G, any species		149
		OR - If rough lumber is used -			
# 9	1 x12 - 14	Ceiling and short walls	No. 1 Common, any species	Rough or S1S	126
# 9	5/8x3 - 14	Battens (ceiling & short walls)	" " " "	" " S4S	52
* 4	1 x 6 - 14	Porch Post finish	No. 1 Common, R.W. Y.P.	" " S4S	28
* 4	1 x 8 - 14	Porch Post finish	" " " "	" " S4S	39
* 1	1 x 8 - 12	Porch frieze	" " " "	" " S4S	8
* 1	1 x 8 - 18	" "	" " " "	" " S4S	12
* 2	1 x 8 - 16	" soffit	" " " "	" " S4S	21
* 2	1 x 4 - 16	" trim or skirt	" " " "	" " S4S	11
# 90	Lin. Ft.1"	Quarter Round moulding for T & G finish (corner fills)			
		OR			
# 90	" " 1x1	Corner fillers if rough lumber finish	No.2 Clear, any species	Rough or S4S	8
* 1	2 x 6 - 18	Top hand rail - porch	No. 1 Common, D.F., R.W., Y.P.	" " S4S	18
* 1	2 x 4 - 18	Bottom rail "	" " " " " "	" " S4S	12
* 6	1 x 4 - 14	Balusters "	" " any species	" " S4S	28
	(Steps)				
* 1	1½x10 - 8	Treads	No.2 Clear, D. F. or Y. P.	" " S4S	14
* 1	1 x 8 - 8	Risers	" " " " "	" " S4S	6
* 1	1 x 12 - 6	Stringers	No.1Common, " " "	" " S1S	6

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
		Porch Material - Continued Flooring			
*320 B. F.	1 x 4	Flooring, vertical grain	No.2 Clear, Oregon D. F. or "C" Grade, California, any species		320
		Inside Walls and Ceiling Cover - Choice of			
#920 B.F.	1 x 4	For ceiling and walls	"C" Grade, California, any Species or No. 3 Clear, Oregon D. F.		920
		OR			
# 16	1 x12 - 16	Ceiling	No. 1 Common, any species	Rough or S1S	256
# 26	1 x12 - 16	Sidings (inside)	" " " "	" " S1S	416
# 15	5/8x3 - 16	Battens (ceiling)	" " R.W., C.-Y.P.	" " S4S	60
# 24	5/8x3 - 16	" (siding)	" " " " "	" " S4S	96
		OR			
#900 B. F.	8"	Shiplap	"C" Grade, California, any species or No.3 Clear, Oregon, D. F.		900

Note:- Add to the lumber order your choice of above wall and ceiling cover and specify rough or surfaced as indicated.

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
		Inside Trim.			
#156	Lin. Ft. 1"	Quarter round moulding - corner fillers -(when surfaced wall and ceiling cover is used)			
#156	" " 1x1	Strips -Corner fillers - (when rough ceiling and wall cover is used)	No. 2 Clear	Rough	
* 3	1 x 6 - 16	Base boards	No. 2 Clear, Y. P.	S4S	24
* 1	1 x 6 - 12	" "	" " "	S4S	6

	No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
			Window and Door Frames, Complete, including inside and outside casings, stops blind stops, parting strips, stool and aprons - if made on the job			
#	1	2 x10 - 16	Sills for 1x8 lapped siding	No. 2 Clear, D. F., Y. P.,	°S1S	27
#	1	2 x 8 - 16	Sills for rustic, shingles or drop siding	No. 2 Clear, " "	°S1S	21
#	4	1 x 8 - 16	Jambs for 1x8 lapped siding	No. 2 Clear, Y.P., R.W., or Cedar	°S1S	43
#	4	1 x 6 - 16	Jambs for rustic, shingle or drop siding	No. 2 Clear, Y.P., R.W., or Cedar	°S1S	32
#	2	1 x 4 - 12	Stools and apron (inside)	" " " " " "	°S4S	8
#	3	1 x 6 - 16	Casings (outside)	" " " " " "	°S4S	24
#	3	1 x 2 - 12	Blind stop	" " " " " "	°S4S	36
#	6	½ x 1 - 12	Parting strip	" " " " " "	°S4S	36
#	3	1 x 4 - 16	Casing (inside)	" " " " " "	°S4S	16
#	1	½ x1½ - 16	Door and window stops	" " " " " "	°S4S	1

°Note:- If surfaced material is not available, buy rough and surface by hand When desirable.

If mill or factory made frames can be purchased, buy them in lieu of the above material. (See Mill Order List - Doors and Windows.)

Mill Order List - Doors and Windows

* 1 2'8" x 6'8" - 1½" Colonial, one light 24"x26", 21 oz. glass, 3 cross panel door -
(See Cut No. B.M.-3)
* 1 2' x 6'8" - 1½" Colonial, 5 cross panel door
* 1 3' x 3' - 1½" Lip rail, 2 light, 21 oz. glass windows
* 2 2'6" x 4'6" - 1½" " " " " " " " "

If mill or factory-made frames can be purchased, order -
# 1 Frame for 2'8" x 6'8" - 1½" outside door (with sill) Complete with inside and outside trim
# 1 " " 2' x 6'8" - 1½" inside door (no sill) Complete with inside and outside trim
# 1 " " 3' x 3' - 1½" window, lip rail (no weights) " " " " " "
# 1 Double Frame for 2 - 2'6" x 4'6" - 1½" lip rail window (no weights) Complete with inside and outside trim

Note:- Specify thickness of walls for each door and window frame and submit with each order a blue print of Detail 6-D.
Specify 1"x6" for outside casing and 1"x4" for all inside casing.

Office Cabinet. (See Detail 6-C, Sheet 1)
* 5 1 x 12 - 16 Cabinet material No. 2 Clear, Y.P., D.F., R.W., or Cedar S4S 80
* 1 1½x 12 - 8 " " " " " " " " " S4S 12
* 1 ½ x 14 - 12 " " " " " " " " " S4S 14

Hardware List.

*	4#	30d.	common wire, frame nails
*	15#	20d.	" " " "
*	40#	10d.	" " " "
*	5#	8d.	" " " "
*	20#	3d.	fine galvanized nails, for roof
*	2#	2d.	" " " " " over eave projections
*	5#	10d.	casing nails, frames and finish
*	9#	8d.	" " flooring and miscellaneous use
*	1#	4d.	finish nails, miscellaneous use
#	15#	10d.	common nails, if 1x8 lapped wall cover is used
#	12#	8d.	" " , if rustic " " " "
#	10#	3d.	fine galvanized nails, if shingle wall cover is used
#	5#	8d.	common nails, for sheeting if shingle wall cover is used
#	6#	8d.	" " if interior walls and ceiling are of rough lumber
#	4#	6d.	" " if battens for interior walls and ceiling are of rough lumber
#	10#	6d.	casing nails if T & G 1x4 wall and ceiling cover is used
#	6#	6d.	" " if shiplap " " " " " "
*	3		Cupboard door catches # 4800 A.C.
*	3pr.		" " hinges # 1474 D-2, 2"
*	2		Drawer pulls # 5074 A.C.
*	1pr.		Half surface hinges 3½" # 160 D-2, A.C.
*	1		Rim knob latch # 8052, knob # 9241
*	6pr.		Window spring bolts
*	11'		4" Galvanized flashing (30 gauge)

Numbers following items of hardware are Pacific Hardware and Steel Company's Catalogue numbers. See hardware list in Builder's Material Section.

FLUE MATERIAL.

The builder shall always submit Details No. 6-A or 6-B with orders for flue materials. This is important.

Irrespective of the pitch of roof, the articles following, before which the mark (*) appears, are to be ordered:

* 1 6" terra cotta bottom joint
* 1 6" " " straight joint
* 1 galvanized drip ferrule, 26 gauge (See cut) made to fit over the roof plate on lower end and to fit snugly around the galvanized pipe mentioned below on upper end.

1/4 Pitch Roof -

1 galvanized roof plate, 26 gauge, with pipe projection to fit around 6" terra cotta pipe for 1/4 pitch roof (See Detail of District 5 Standard Flue)

1 5-foot length, 26 gauge, galvanized pipe made so as to slide inside 6" terra cotta pipe. On bottom it shall be made to fit on to standard 6" black iron stove pipe. On its top shall be riveted a plain, convex storm hood of standard design.

1/3 Pitch Roof -

1 galvanized roof plate, 26 gauge, with pipe projection to fit around 6" terra cotta pipe for 1/3 pitch roof (See Detail of District 5 Standard Flue)

1 6 ft. 4 in. length, 26 gauge, galvanized pipe made so as to slide inside 6" terra cotta pipe. On bottom it shall be made to fit on to standard 6" black iron stove pipe. On its top shall be riveted a plain, convex storm hood of standard design.

1/2 Pitch Roof -

1 galvanized roof plate, 26 gauge, with pipe projection to fit around 6" terra cotta pipe for 1/3 pitch roof (See Detail of District 5 Standard Flue)

1 9-foot length, 26 gauge, galvanized pipe made so as to slide inside 6" terra cotta pipe. On bottom it shall be made to fit on to standard 6" black iron stove pipe. On its top shall be riveted a plain, convex storm hood of standard design.

*

* 1# Cement and 1.3# clean sand for each joint of terra cotta.

Where snow fall exceeds 30", install the flue protector shown in Detail No. 6-B. The builder shall add material necessary to build the protector.

Paint.

* 4 gal. Regulation outside body gray paint
* 1½ " " " trim white "
* 4 " " " roof green "
* 1½ " " floor paint
* 2 lbs. Putty
* 4 pcs. Sandpaper No. 1
# 1 gal. Boiled linseed oil
# ½ " Turpentine

Note: If Laird and Sinclair's paint is used, omit linseed oil and turpentine and add -

1 gal. Aroturps for each five gallons of outside paint on the order list

See Painting Section in this manual.

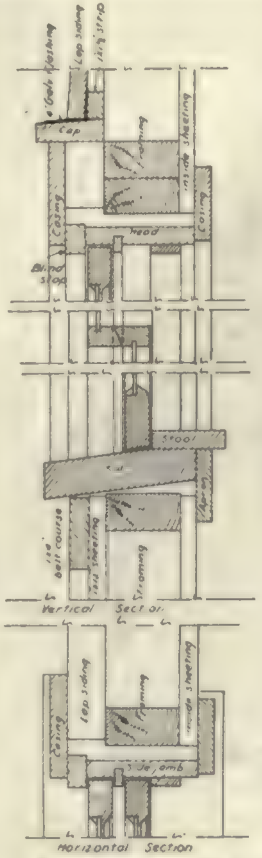
For interior paints - select choice and add quantity of paint or stains to the paint order list.

Cement.

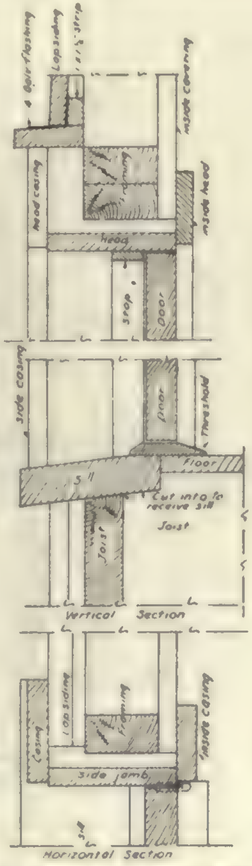
See specifications for all concrete work if concrete foundation is practicable for this building.

Specifications.

For specifications applicable to this plan - see pages 18-27 of Plan 1-C



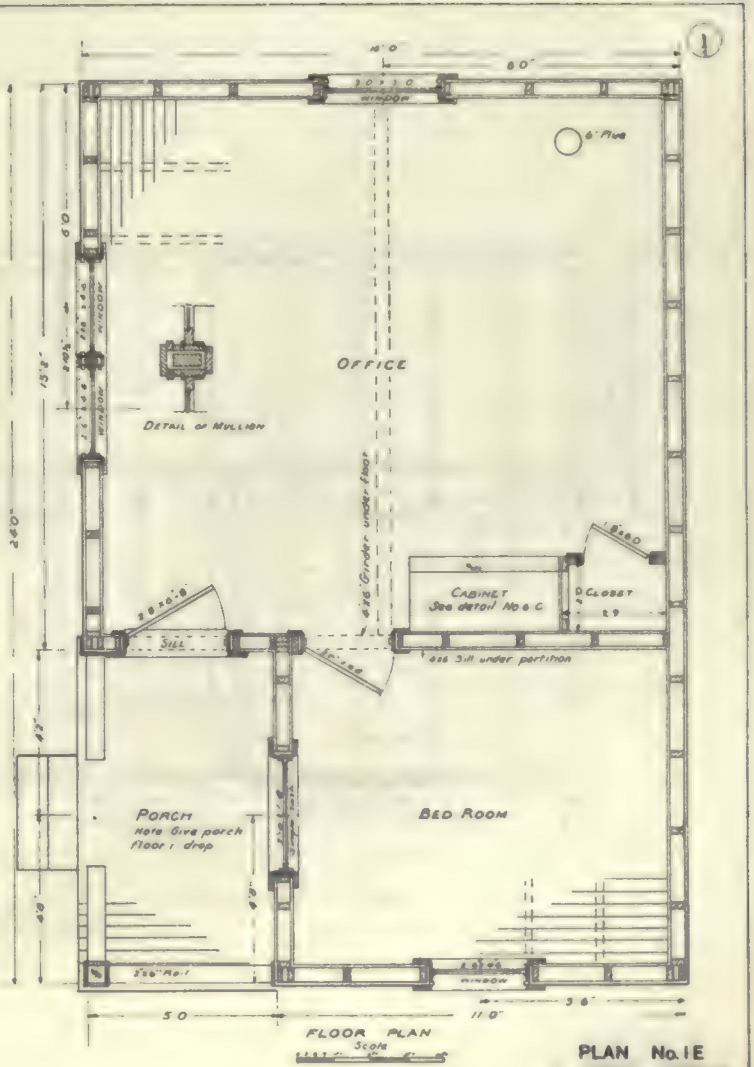
DETAIL OF WINDOW FRAME



DETAIL OF OUTSIDE DOOR FRAME

Scale

Note: Sill and jambs of both doors and windows to be made narrower if rustic or boards and battens are used for outside cover

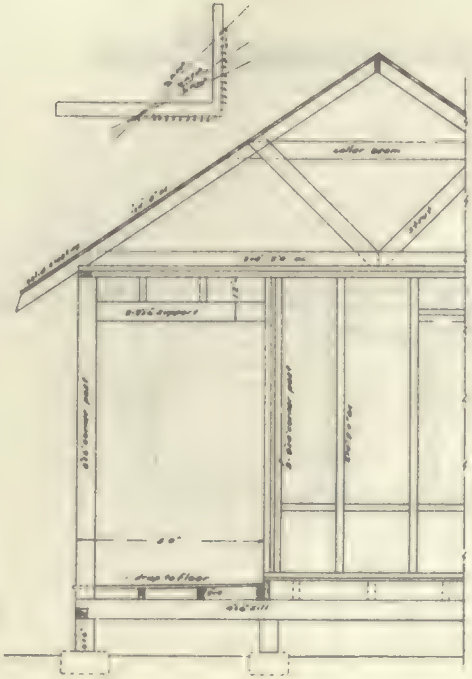


FLOOR PLAN

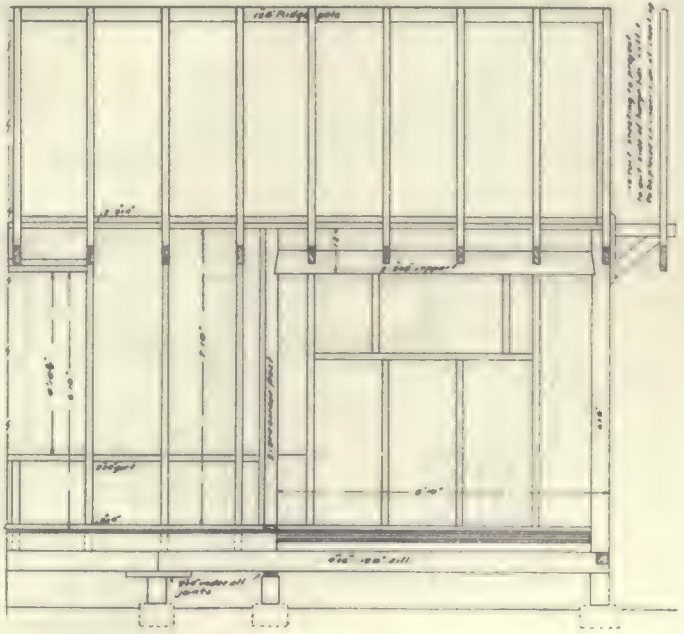
Scale

PLAN No. 1E
2 ROOM OFFICE

16'0" X 24'0"
U. S. FOREST SERVICE
DISTRICT No. 6

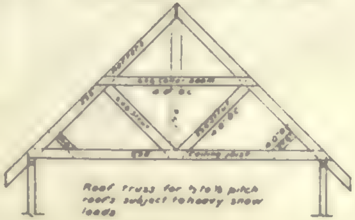


END ELEVATION OF FRAME



Scale

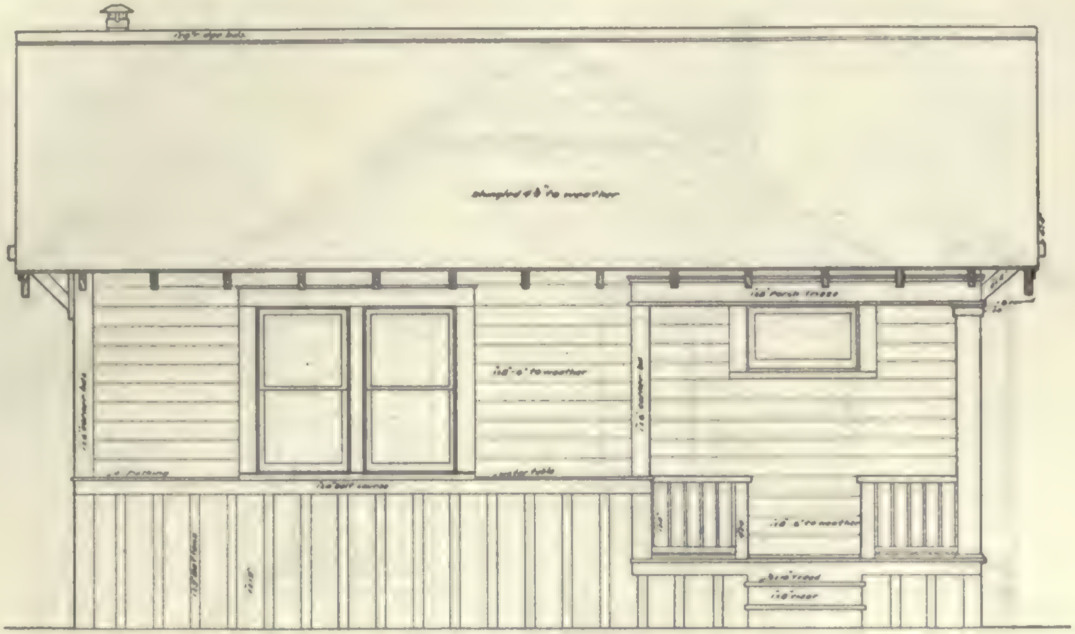
SIDE ELEVATION OF FRAME



Roof truss for ⅓ to ½ pitch roofs subject to heavy snow loads

PLAN No. 1E
2 ROOM OFFICE
16'0" X 24'0"
U. S. FOREST SERVICE
DISTRICT No. 5

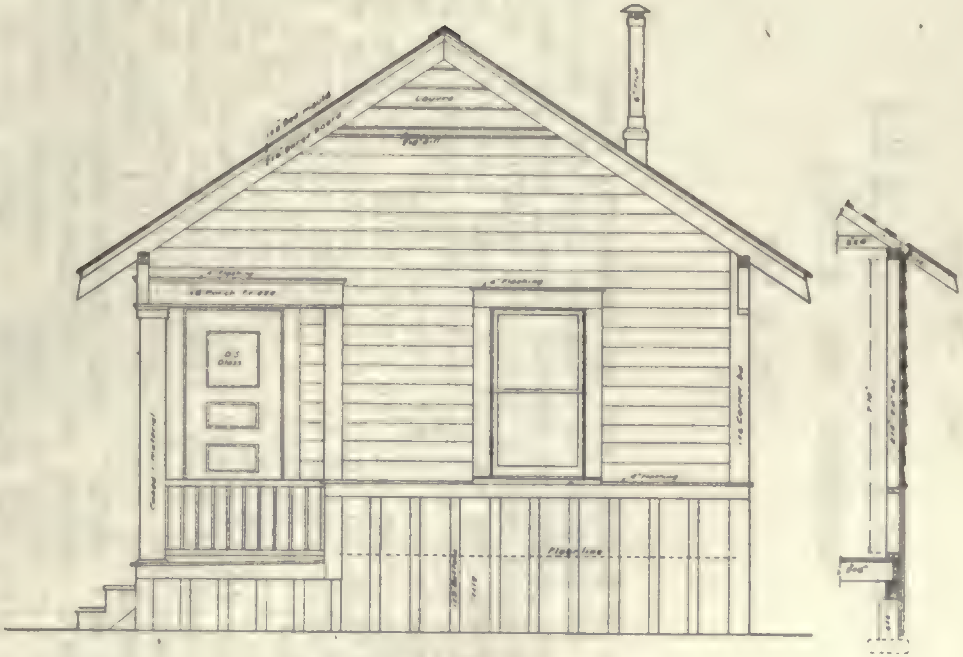
③



SIDE ELEVATION

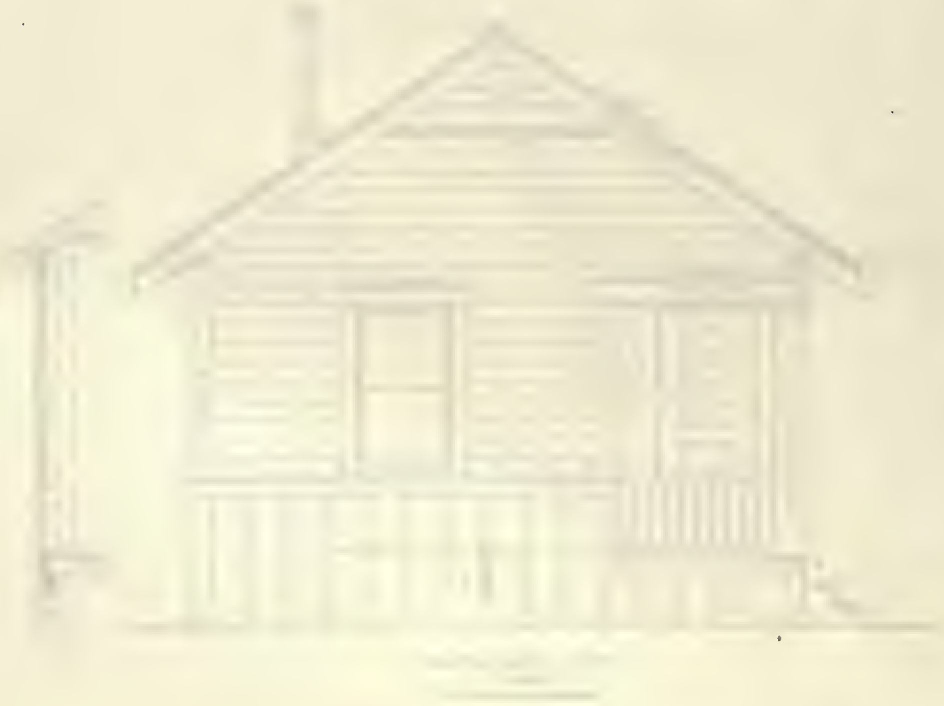
Scale

PLAN No. 1E
2 ROOM OFFICE
16 0" X 24 0"
U S FOREST SERVICE
DISTRICT No. 5



END ELEVATION
Scale

PLAN No. 1E
2 ROOM OFFICE
16 0" X 24 0"
U. S. FOREST SERVICE
DISTRICT No. 5



PLAN NO. 1-E

TWO ROOM OFFICE

(OFFICE AND BEDROOM)

16' x 24'

Items preceded by the mark (*) are standard and are not subject to change or choice. Conditions of the local lumber markets, and the isolation of certain building sites from markets carrying a varied stock of lumber are factors which will govern selection of the type of outside and inside wall cover, trim and sizes and kinds of nails. Elevation of the particular building site will determine the slope of roof to use and the dimensions of the roof frame material to order. All items subject to change or choice are indicated by the mark (#). To prepare a complete order list, select the items marked (#) which, under the particular circumstances, will be best adapted for use at a given building site. Add such items to those marked (*). To all items of lumber add the specifications shown under "Grade and Species", and "Finish". For example, two pieces 4"x6"-16' No. 1 Common, redwood, cedar, Douglas fir or pine, rough. To all items of hardware add only such descriptive matter as is necessary to adequately describe each item. For example, 2 pounds 30d. common wire nails - 3 pounds 30d. fine galvanized wire nails. Do not show on the order list the purpose for which the hardware items are to be used.

Estimated cost of construction - labor at $4.00 per day - $ 140.00.

Builder's List of Materials.

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
		Sills and Floor Joists.			
* 4	4 x 6 - 12	Sills	Redwood, cedar or Douglas Fir	Rough	96
* 4	4 x 6 - 16	"	" " " " "	"	128
* 8	2 x 6 - 16	Floor joists	(No.2 Clear,D.F., 1st. Choice	(Rough	128
* 6	2 x 6 - 16	End bridging	(	(or	96
* 3	2 x 6 - 18	Joists - bedroom floor	(No.1 " W.F.,R.F.2nd. "	(Sized	54
* 2	2 x 4 - 18	" - porch floor	(	(if	24
* 1	2 x 8 - 18	Overhead porch supports	(No.2 " Y. P. 3rd. "	(Practic-	18
* 1	2 x 6 - 12	" " "	(	(able	12
* 2	6 x 6 - 14	Underpinning	Heart cedar or Redwood	Rough	84

Note:- The item underpinning includes sufficient material shown in plan. The actual amount needed will depend upon the slope of the ground of each particular building site. Make due allowance for this item in the lumber order. If split or round material is used this item may be eliminated from the lumber list.

		Studding, Plates, Girts, Etc.			
*36	2 x 4 - 16	Studs-partition and gable end	No. 1 Common, any species	(Rough (or	384
*18	2 x 4 - 16	Plates, top & bottom	" " " "	(Sized	192
*11	2 x 4 - 16	Girts, headers & extras	" " " "	(if	118
* 5	2 x 4 - 16	Girts for false foundations"	" , " "	(Prac-	54
* 1	6 x 6 - 9	Porch post or stud	No. 1 " " "	(tic-	27
# 4	1 x 6 - 14	Diagonal braces for building to carry heavy snow load		(able	28
# 4	1 x 6 - 12	" " " " " " " " "			24

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
		Wall Cover (Outside) Below water table Standard regardless of cover above water table			
*20	1 x12 - 16	Base covering or sheeting	No. 1 Common, any species	Rough or S1S	320
*18	5/8x3 -16	" " battens	" " " "	" " S4S	48
* 5	1 x 3 - 16	Water table	No. 2 Clear, " "	" " S1S1E	72

Note:- The first two items include sufficient siding for buildings having underpinning of the height shown on plan. The actual amount needed will depend upon the slope of the building site. Make due allowance for this item in the lumber order.

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
		Material for Cover Above Water Table - Choice of			
#588 B. F.	1 x 8	Wall cover, lapped 6" to weather (above water table)	No. 1 Common, any species	Rough	588
		OR			
#560 B. F.	6"or8"	Rustic or drop siding	"C" Grade, California, any species No. 3 Clear, Oregon Douglas fir		560
		OR			
#240 B. F.	1 x 4	Sheeting for shingles	No. 2 Common, any species	Rough	240
#3500	- -	Shingles, 5" to weather	Star A Star, Red Cedar		

No. Pcs.	Size	Purpose & Location	Grade & Species	Finish	Bd.Ft.
Roof Frame and Cover, 1/4 Pitch, 2' Eaves and Gable Projections (Elevations up to 2000 Feet)					
#13	2 x 4 - 16	Ceiling joists	Same as floor joists	Rough	139
#26	2 x 4 - 12	Rafters 2' O. C.	" " " "	"	208
# 2	1 x 6 - 12	Ridge pole	No. 1 Common, any species	"	12
# 6	1 x 6 - 12	Collar beams	Same as floor joists	"	36
# 2	1 x 6 - 14	Rafter ties to joist near plate	No. 1 Common, any species	"	14
#271	B. F. 1x4	Roof sheeting 8" O. C. except eaves	No. 2 " " "	"	271
#5250	- -	Shingles(Roof) 4½" to weather	Star A Star, Red Cedar		
# 2	1 x 6 - 12	Saddle boards	No. 1 Common, any species	"	12
# 2	1 x 6 - 16	" "	" " " "	"	16
# 4	1 x12 - 12	Sheeting 18" rafter projection	" " " "	"orS1S	48
# 4	1 x12 - 16	As above	" " " "	" " "	34
# 4	2 x 6 - 12	Barge boards	" " " "	" "S4S	48
# 4	1 x 2 - 12	Barge board trim	No. 2 Clear, " "	" " "	8
# 2	1 x 6 - 18	Frieze boards gable ends	No. 1 Common, " "	" " "	18
# 3	1 x 4 - 14	Rafter frieze (between rafters)	" " " "	" "S1S	14
# 8	1 x10 - 12	Soffit for gable projection	" " " "	" " "	80
# 1	2 x 8 - 16	Sills for louvre	No. 1 " " "	" "S4S	22
# 3	1 x 8 - 16	Jamb and slats for louvre	" " " "	" "S1S	32

Note:- The preceding 8 items are listed rough or surfaced, etc., if rough lumber wall cover is used all will be rough; if rustic or drop siding wall cover is used, order surfaced as indicated. If shingle wall cover is used, ordinarily these items will be rough, but occasion may arise where preferable to surface as indicated. Substitute milled bed mould for barge trim when rustic wall cover is used, and add 4 pieces 12' long of 1" 1/4 round moulding for frieze trim.

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd. F.
		Roof Frame and Cover, 1/4 Pitch, 2' Eaves and Gable Projections - Continued (Elevations up to 2000 Feet)			
Choice of -					
# 80 B. F.	1 x 8	Sheeting 6" to weather- gable ends	No. 1 Common, any species	Rough	80
		OR - If rustic or drop siding wall cover is used -			
# 90 B. F.	6"or8"	Rustic or drop siding - gable ends cover	"C" Grade California, any species or No.3 Clear, Oregon D. F.	"	90
		OR - If shingle wall cover is used -			
# 42 B. F.	1 x 4	Sheeting for shingle gable ends	No. 2 Common, any species	"	42
# 500	-	- Shingles, 5" to weather gable ends	Star A Star, Red Cedar		

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
		Roof Frame and Cover, 1/3 Pitch, 18" Eaves and Gable Projections (Elevations between 2000 and 3500 Feet)			
# 13	2 x 6 - 16	Ceiling joists	Same as floor joists	Rough	208
# 26	2 x 6 - 12	Rafters 2' O.C.	" " " "	"	312
# 2	1 x 8 - 12	Ridge pole	No. 1 Common, any species	"	16
# 6	1 x 6 - 14	Collar beams	Same as floor joists	"	42
# 8	1 x 6 - 16	Angle struts (°)	" " " "	"	64
# 6	1 x 6 - 12	Vertical struts (°)	" " " "	"	36
# 4	1 x 6 - 14	Rafter ties to joist near plate	No. 1 Common, any species	"	28
# 288 B. F.	1x4	Sheeting (Roof) 8" O.C. except eaves	No. 2 " " "	"	288
# 5250	- -	Shingles (Roof) 4½" to weather	Star A Star, Red Cedar	"	
# 2	1 x 6 - 12	Saddle boards	No. 1 Common, any species	"	12
# 2	1 x 6 - 16	" "	" " " "	"	16
# 4	1 x12 - 12	Sheeting, 18" rafter projection	" " " "	" or S1S	48
# 4	1 x12 - 16	Sheeting, as above	" " " "	" " S1S	64
# 4	1 x 6 - 12	Barge boards	" " " "	" " S4S	24
# 4	1 x 2 - 12	Barge board trim	No. 2 Clear, " "	" " S4S	8
# 4	1 x 6 - 12	Frieze boards - gable ends	No. 1 Common " "	" " S4S	24
# 3	1 x 6 - 14	Rafter frieze (between rafters)	No. 1 Common any "	" " S1S	21
# 4	1 x 6 - 12	Soffit for gable projection	" " " "	" " S1S	24
# 4	1 x 8 - 12	Soffit, as above	" " " "	" " S1S	32
# 1	2 x 8 - 16	Sills for louvre	" " " "	" " S4S	22
# 3	1 x 8 - 16	Jamb and slats for louvre	" " " "	" " S1S	32

(See Note on next page)

Roof Frame and Cover, 1/3 Pitch, 18" Eaves and Gable Projections - Continued
(Elevations between 2000 - 3500 Feet)

Note:- The preceding 10 items are listed rough or surfaced, etc., if rough lumbe wall cover is used all should be rough; if rustic or drop siding wall cover used, order surfaced as indicated. If shingle wall cover is used, ordinarily these items should be rough, but occasion may arise where preferable to surface as indicated. Substitute milled bed mould for barge trim when rustic wall cover is used, and add 4 pieces 12' long of 1" 1/4 round moulding for frieze trim.

(°) At elevations where snow fall is less than 2 feet, the items after which the mark (°) appears should not be ordered or used.

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd. Ft.
#100	B. F. 1x8	Sheeting 6" to weather, gable ends	No. 1 Common, any species	Rough	100
		OR - If rustic or drop siding wall cover is used -			
#110	B. F. 6" or 8"	Rustic or drop siding gable ends cover	"C" Grade, California, any species or No.3 Clear, Oregon D.F.		110
		OR - If shingle wall cover is used -			
# 52	B. F. 1x4	Sheeting for shingle gable ends	No. 2 Common, any species	Rough	52
#750	- -	Shingles, 5" to weather	Star A Star, Red Cedar		

No. Pos.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
		Roof Frame and Cover, 1/2 Pitch, 18" Eaves and Gable Projections (Elevations over 3500 feet)			
# 13	2 x 6 - 16	Ceiling joists	Same as floor joists	Rough	208
# 26	2 x 8 - 14	Rafters 2' O. C.	" " " "	"	506
# 2	1 x10 - 12	Ridge pole	No. 1 Common, any species	"	20
# 8	1 x 8 - 16	Collar beams	Same as floor joists	"	96
# 1	2 x 6 - 18	Struts under rafters & over outer walls at porch	" " " "	"	18
# 8	1 x 6 - 14	Rafter ties to joist near plate	No. 1 Common, any species	"	56
#325 B. F.	1x4	Roof sheeting 8" O. C. except eaves	No. 2 " " "	"	325
#5750	- -	Shingles (Roof) 4½" to weather	Star A Star, Red Cedar	"	
# 2	1 x 6 - 12	Saddle boards	No. 1 Common, any species	"	12
# 2	1 x 6 - 16	" "	" " " "	"	18
# 4	1 x12 - 12	Sheeting, 18" rafter projection	" " " "	" or S1S	48
# 4	1 x12- 16	Sheeting, as above	" " " "	" " S1S	64
# 4	2 x 8 - 14	Barge boards	" " " "	" " S4S	75
# 4	1 x 2 - 14	Barge board trim	No. 2 Clear, " "	" " S4S	10
# 4	1 x 8 - 12	Frieze boards - gable ends	No. 1 Common, " "	" " S4S	32
# 3	1 x 8 - 14	Rafter frieze (between rafters)	" " " "	" " S1S	28
# 4	1 x 6 - 12	Soffit for gable projection	" " " "	" " S1S	28
# 4	1 x 8 - 12	Soffit, as above	" " " "	" " S1S	32

(See note on next page)

Roof Frame and Cover, 1/2 Pitch, 18" Eaves and Gable Projections - Continued
(Elevations over 3500 Feet)

Note:- The preceding 8 items are listed rough or surfaced, etc., if rough lumber wall cover is used all will be rough; if rustic or drop siding wall cover is used, order surfaced as indicated. If shingle wall cover is used, ordinarily these items will be rough, but occasion may arise where preferable to surface as indicated. Substitute milled bed mould for barge trim when rustic wall cover is used, and add 4 pieces 12' long of 1" 1/4 round moulding for frieze trim.

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
# 150	B. F. 1x8	Sheeting 6" to weather gable ends	No. 1 Common, any species	Rough	150
		OR - If rustic or drop siding wall cover is used -			
# 160	B. F. 6"or8"	Rustic or drop siding gable ends	"C" Grade, California, any species or No.3 Clear, Oregon D. F.		
		OR - If shingle wall cover is used -			
# 75	B. F. 1x4	Sheeting for shingle gable ends	No. 2 Common, any species	Rough	75
#1000	- -	Shingles, 5" to weather	Star A Star, Red Cedar		

No louvres for buildings with 1/2 pitch roof.

	No. Pcs.	Size	Purpose & Location		Grade and Species	Finish	Bd.Ft.
		Outside Trim.					
#	1	4 x 4 - 20	For 4 brackets	)For 1/4 &	No. 1 Common, any species	Rough or S4S	27
#	1	2 x 4 - 12	" 4 "	)1/3 Pitch	" " " "	" " S4S	8
		OR -		)Roof			
#	1	4 x 4 - 16	" 6 "	)For 1/2	" " " "	" " S4S	22
#	1	4 x 4 - 14	" 6 "	)Pitch	" " " "	" " S4S	19
#	1	2 x 4 - 14	" 6 "	)Roof	" " " "	" " S4S	10
*	5	1 x 6 - 14	Corner boards		" " " "	" " S4S	35
*	5	1 x 4 - 16	Belt course		" " " "	" " S1S2E	27

Note:- Order the above list rough or surfaced as indicated, to correspond with outside wall (above water table) finish.

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
	Porch Material.				
* 60	B. F. 1x4	Porch Flooring, Vertical Grain, T & G	"C"Grade California, any species or No. 2 Clear, Oregon D. F.		60
* 1	1 x 6 - 14	Porch post finish	No. 1 Common, RW or Y.P.	Rough or S4S	7
* 1	1 x 8 - 14	" " "	" " " " "	" " S4S	10
* 1	1 x 8 - 16	" frieze	" " " " "	" " S4S	11
** 1	1 x 8 - 14	" soffit	" " " " "	" " S4s	10
* 1	2 x 6 - 12	" top hand rail	" " D.F., R.W., Y.P.	" " S4S	12
* 1	2 x 4 - 12	" bottom hand rail	" " " " "	" " S4S	8
* 4	1 x 4 - 14	" balusters	" " any species	" " S4S	19
# 85	B. F. 1x4	" ceiling and 16' wall cover, T & G	"C" Grade California, any species or No.3 Clear, Oregon D. F.		85
	OR				
# 72	B. F. 1x12	" ceiling and walls	No. 1 Common, any species (o)	Rough or S1S	72
# 18	B. F. 5/8x3	" " battens	" " " " (o)	" " S4S	18
	OR				
# 80	B. F. 1x8	" " and walls Shiplap	"C" Grade California, any species or No.3 Clear, Oregon D. F.		80
# 32	Lin.Ft.	1" Quarter round moulding (corner filler) or			
# 32	" "	1x1 strips-corner fillers	No. 2 Clear, any species	Rough or S4S	3
	(Steps)				
* 1	1½x10 - 8	Treads	" " D.F. or Y.P.	" " S4S	10
* 1	1 x 8 -12	Risers	" " " " "	" " S4S	8
* 1	1 x12 - 8	Stringers	No. 1 Common," " "	" " S1S	8

Note:- A choice of ceiling material is listed above. If rough lumber wall cover (above water table) is used, all of the material marked (o) may be rough. If rustic or drop siding is used, this may be surfaced as indicated. The same applies to shingle wall cover. If rough lumber is used, apply the 1x1 strips for corner fillers.

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
	Flooring.				
* 435	B. F.	Flooring (House) T & G vertical grain	"C" Grade, California, any species or No.2 Clear, Oregon D. F.		435
	Inside Wall and Ceiling Cover - Choice of				
# 700	B. F. 1x12	Wall cover	No. 1 Common, any species	Rough or S1S	700
# 175	B. F. 5/8x3	Battens (Wall Cover)	" " R.W., C. or Y.P.	" " S4S	175
# 330	B. F. 1x12	Ceiling cover	" " any species	" " S1S	330
# 85	B. F. 5/8x3	" " battens	" " R.W., C. or Y.P.	" " S4S	85
		OR			
# 875	B. F. 1x4	Wall Cover, T & G	"C" Grade, California, any species or No.3 Clear, Oregon D.F.		875
# 410	B. F. 1x4	Ceiling Cover, T & G	Same as above		410
		OR			
# 840	B. F. 8"	Shiplap wall cover	" " "		840
# 395	B. F. 8"	" ceiling cover	" " "		395

Note:- Add to lumber order choice of above wall and ceiling cover and specify rough or surfaced as indicated.

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
	Inside Trim.				
# 200	Lin. Ft.	1" Quarter Round corner fillers - or			
# 200	Lin.-Ft.	- 1"x1" strips " , "	No.2 Clear, any species	Rough or S4S	4[illegible]
* 6	1 x 6 - 16	Base boards	No. 2 Clear, Y. P.	S4S	48

No. Pcs.	Size	Purpose & Location	Grade & Species	Finish	Bd.Ft.
		Door and Window Frame Material Complete -	including inside and outside casings stops, blind stops, parting strips, stools and aprons - if made on the job.		
# 1	2 x10 - 14	Sills (if 1x8 lap siding)	No.2 Clear, D.F. or Y.P.	S1S	24
# 1	2 x10 - 8	" (" " " ")	" " " " "	S1S	14
# 1	2 x 8 - 14	" (if rustic or shingle) siding)	" " " " "	S1S	19
# 1	2 x 8 - 8	" (if rustic or shingle)	" " " " "	S1S	11
# 6	1 x 8 - 14	Jambs (if 1x8 lap siding)	" " Y.P.,R.W.,or C.	S1S	56
# 6	1 x 6 - 14	" (if rustic or shingles)	" " " " " "	S1S	42
# 6	1 x 6 - 14	Casings (outside)	" " " " " "	S4S	42
# 7	1 x 4 - 14	" (inside)	" " " " " "	S4S	33
# 1	1 x 4 - 18	" "	" " " " " "	S4S	6
# 1	1 x 6 - 14	Jambs (inside doors)	" " " " " "	S4S	7
# 1	1 x 6 - 18	" " "	" " " " " "	S4S	9
# 5	1 x 2 - 14	Blind stops	" " " " " "	S4S	12
# 5	½ x 1 - 12	Parting strips	" " " " " "	S4S	5
# 2	1 x 4 - 12	Stools and aprons	" " " " " "	S4S	8
#120	Lin. ft.	½ x1½ window and door stops"	" " " " "	S4S	15

Note:- All window and door frame material should be ordered as indicated above, if impracticable to purchase surfaced material order No. 1 Clear, Rough.

If mill or factory made frames can be purchased, it is advisable to buy them in lieu of the above material.

Mill Order List - Doors & Windows

* 1 2'8"x6'8"-1½" Colonial, one light 24"x26", 21 oz. glass, 3 cross panel door - See Cut B.M.No.-3
* 1 2' x6'8"-1½" " 5 cross panel door " " " "
* 1 1'8"x6' -1½" " 5 " " " " " " "
* 1 3' x3' -1½" Lip rail, 2 light, 21 oz. glass window
* 3 2'6"x4'6"-1½" " " " " " " "
* 1 3' x1'8"-1½" One light, 21 oz. glass sash

Note:- If mill or factory made frames can be purchased, order them complete with inside and outside casings, stops, blind stops, parting strip, stool and aprons, as follows:

1 Frame for 2'8"x6'8"-1½" outside door with sill-Complete as specified above
1 " " 2' x6'8"-1½" inside door (no sill) " " " "
1 " " 1'8"x6' -1½" " " " " " " " "
1 " " 3' x3' -1½" lip rail window (no weights)" " " "
1 " " 3' x1'8"-1½" sash " " " "
1 " " 2'6"x4'6"-1½" lip rail " " " " " " "
1 Mullion or double frame for two 2'6"x4'6"-1½" windows (no weights)

Note:- SPECIFY THICKNESS OF WALLS for each door and window frame and submit with each order blue print of Sheet 5 (which shows frames in detail) when factory or mill made frames are purchased.

All outside casings should be 1"x6" - all inside casings should be 1"x4".

Cabinet. See Detail No. 6-6.

* 5 pcs. 1 x12 - 16	No. 2 Clear, Y.P., D.F., R.W., or C.	S4S	80
* 1 1½x12 - 8	" " " " " " "	S4S	12
* 1 ½ x14 - 12	" " " " " " "	S4S	14

Note:- Hardware for cabinet is included in "Hardware List."

Hardware List.

*	5#	30d.	common wire, frame nails
*	8#	20d.	" " " "
*	48#	10d.	" " " " scaffolding, etc.
*	12#	10d.	" " roof sheeting nails
*	12#	10d.	" " nails for outside cover below water table
*	8#	8d.	casing nails for floor
*	10#	8d.	" " inside finish
*	5#	6d.	" " " "
*	2#	3d.	" " " "
*	22#	3d.	fine galvanized shingle nails (roof)
*	2#	2d.	" " " " (over eaves)
#	12#	10d.	common wire if 1x8 lapped walls above water table
#	20#	8d.	" " if rustic " " " "
#	12#	3d.	fine galvanized nails if shingled wall above water table
#	10#	10d.	casing nails if window and door frames are made on the job
#	8#	10d.	" " for frames if factory made
#	18#	6d.	" " if inside walls and ceiling are 1x4 T & G
#	15#	8d.	" " " " " " " " 1x8 Shiplap
#	18#	8d.	" " " " " " " " 1x12
#	12#	6d.	" " " " " " " " 1x12 (5/8 battens)
*	80'	4"	galvanized iron flashing, 30 gauge
*	3		rim latches #8052, knob #9241
*	8pr.		window spring bolts (upper and lower sash)
*	3 "	3½"	half surface loose pin butts A.C. door hinges
*	12		coat hooks #92-J
*	3		cupboard door catches #4800 A.C.
*	3 "	2"	cupboard hinges, #1474 D 2
*	2		drawer pulls # 5074 A.C.

Numbers following items of hardware are Pacific Hardware and Steel Company's catalogue numbers. See hardware list in Building Material Section.

FLUE MATERIAL.

The builder shall always submit Details No. 6-A or 6-B with orders for flue materials. This is important.

Irrespective of the pitch of roof, the articles following, before which the mark (*) appears, are to be ordered:

*1 6" Terra cotta bottom pipe or joint
*1 6" " " straight joint
*1 26 gauge, galvanized drip ferrule (see cut) made to fit over the roof plate on lower end and to fit snugly around the galvanized pipe mentioned below at upper end

1/4 Pitch Roof -

1 Galvanized roof plate, 26 gauge, with pipe projection to fit around 6" terra cotta pipe for 1/4 pitch roof (See Detail of District 5 Standard Flue)
4'10" Length, 26 gauge, galvanized pipe made so as to slide inside 6" terra cotta pipe. On bottom it shall be made to fit on to standard 6" black iron stove pipe. On its top shall be riveted a plain, convex storm hood of standard design.

1/3 Pitch Roof -

1 Galvanized roof plate, 26 gauge, with pipe projection to fit around 6" terra cotta pipe for 1/3 pitch roof (See Detail of District 5 Standard Flue)
6' Length, 26 gauge, galvanized pipe made so as to slide inside 6" terra cotta pipe. On bottom it shall be made to fit on to standard 6" black iron stove pipe. On its top shall be riveted a plain, convex storm hood of standard design.

1/2 Pitch Roof -

1 Galvanized roof plate, 26 gauge, with pipe projection to fit around 6" terra cotta pipe for 1/2 pitch roof (See Detail of District 5 Standard Flue)
8'8" Length, 26 gauge, galvanized pipe made so as to slide inside 6" terra cotta pipe. On bottom it shall be made to fit on to standard 6" black iron stove pipe. On its top shall be riveted a plain, convex storm hood of standard design.

* 1# Cement and 1.3# clean sand for each joint of terra cotta.
(See note on next page)

Note:- Where snow fall exceeds 30", install the flue protector shown in Detail No. 6-B. The builder shall add material necessary to build the protector.

Paint.

*	5	gals.	Regulation	outside	body gray paint
*	1½	"	"	"	trim white "
*	4	"	"	"	roof green "
*	2	"	"	floor	
*	2	lbs.	Putty		
*	4	pcs.	Sandpaper No. 1		
#	1	gal.	Boiled linseed oil		
#	½	"	Turpentine		

If Laird & Sinclair paint is used, omit linseed oil and turpentine and add -

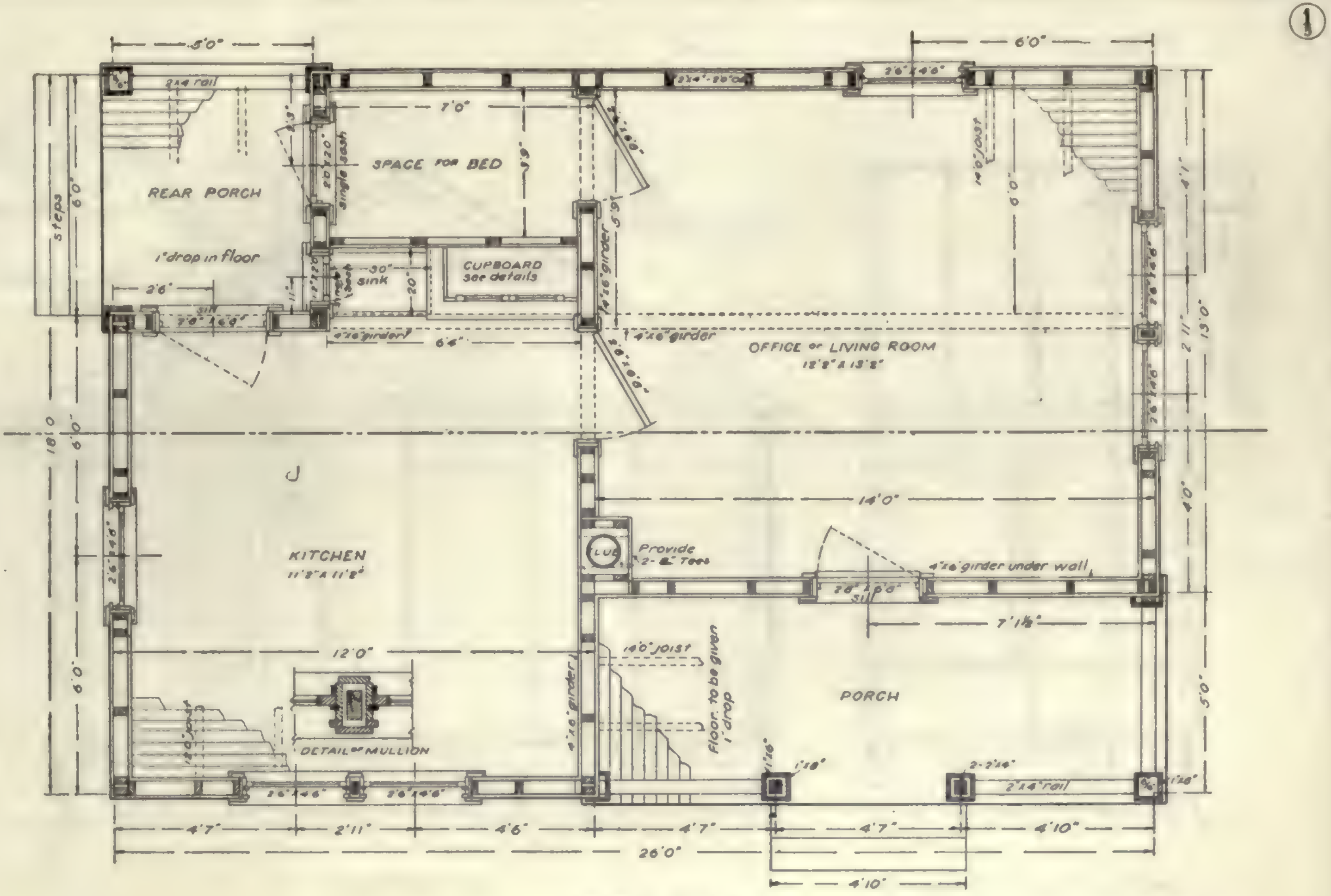
# 1 gal. Aroturps for each 5 gallons of outside paint.

For interior painting - select choice and add quantity of paints or stains to the paint order list.

See Painting Section of the circular.

Specifications.

For specifications applicable to this plan - see pages 18-27 of Plan 1-C.



FLOOR PLAN

scale

PLAN No. 1F

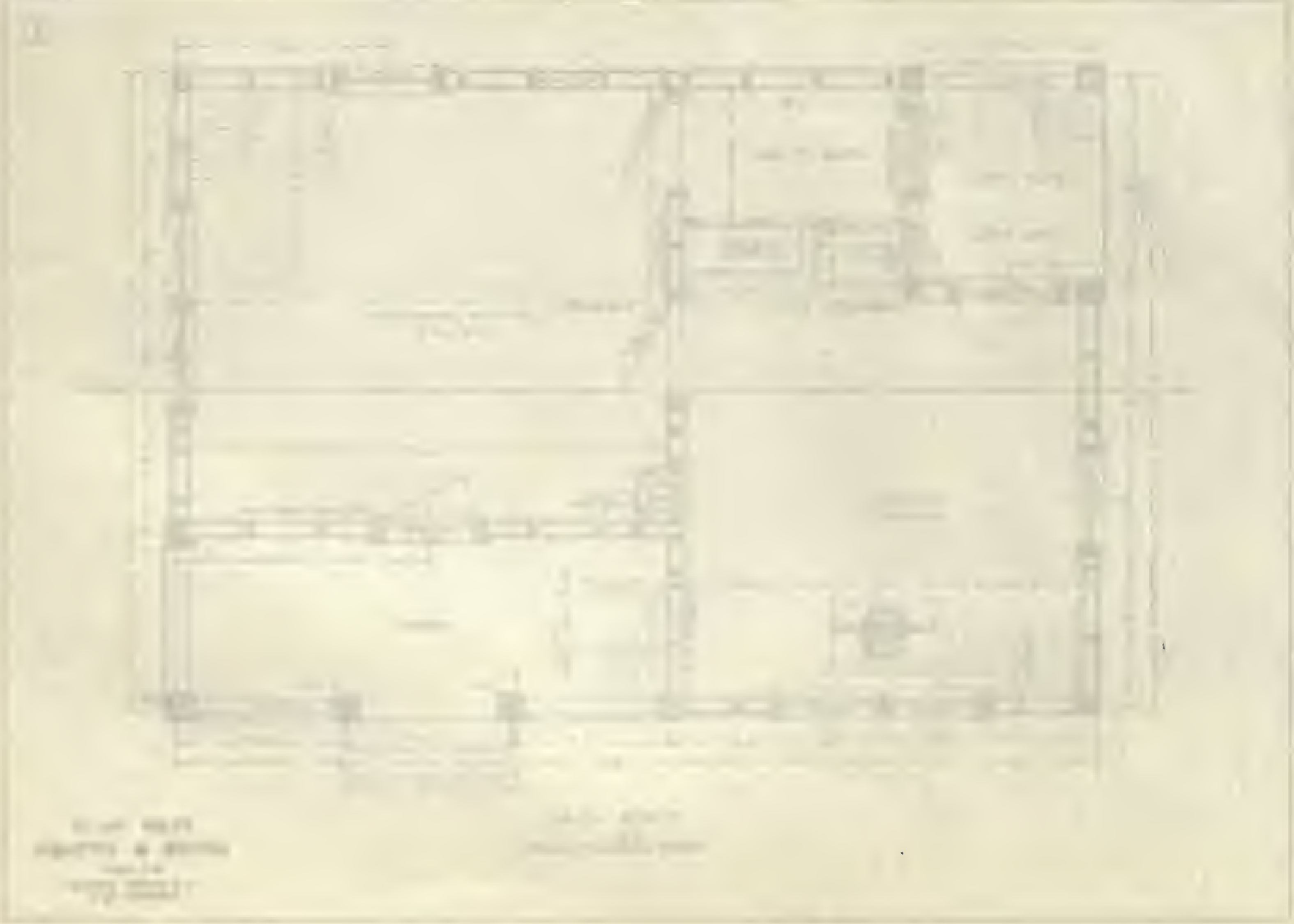
OFFICE & KITCHEN

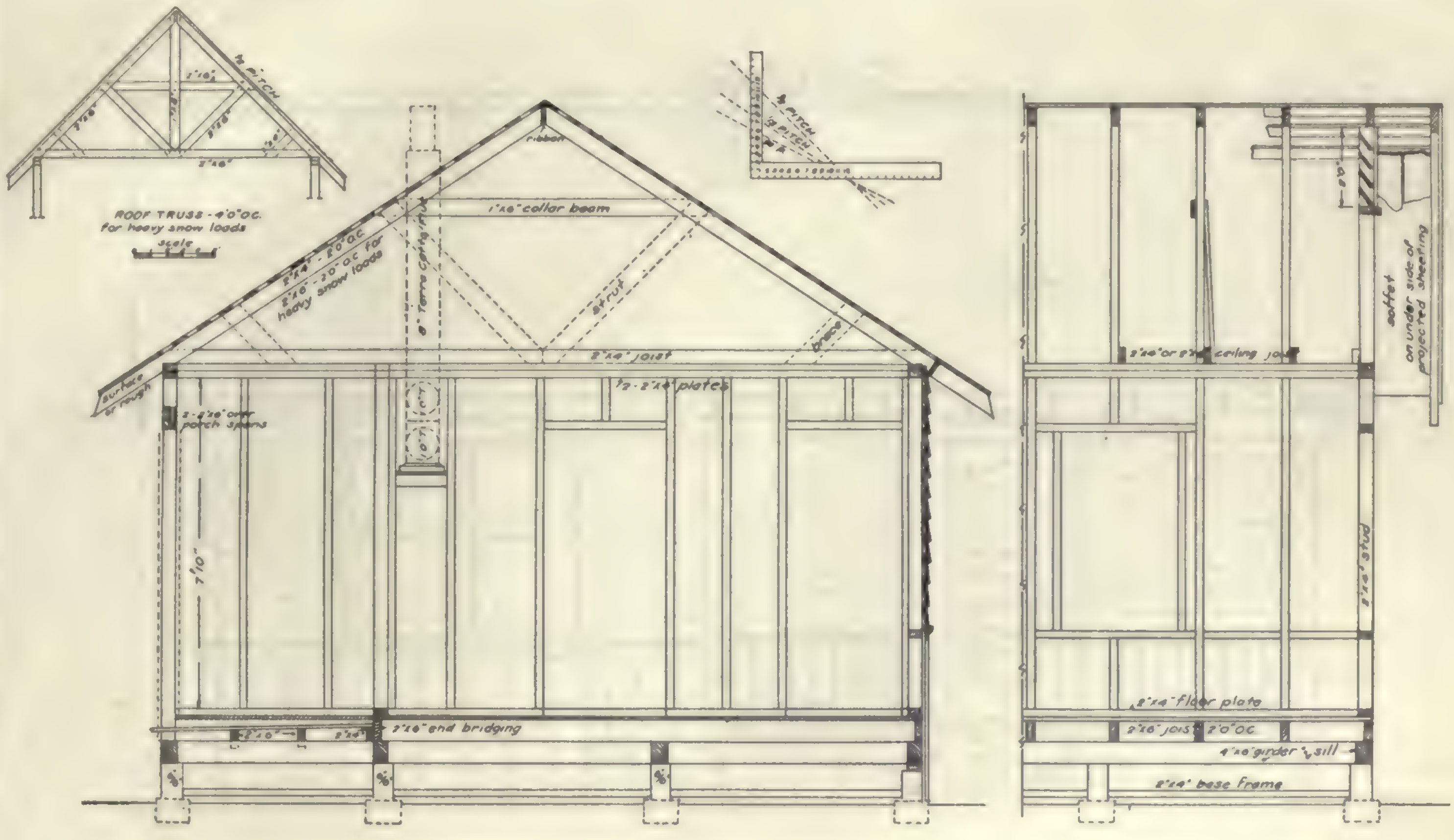
18'0 X 26'0

U. S. FOREST SERVICE

DISTRICT No. 3

L.B.M. 2-2-17



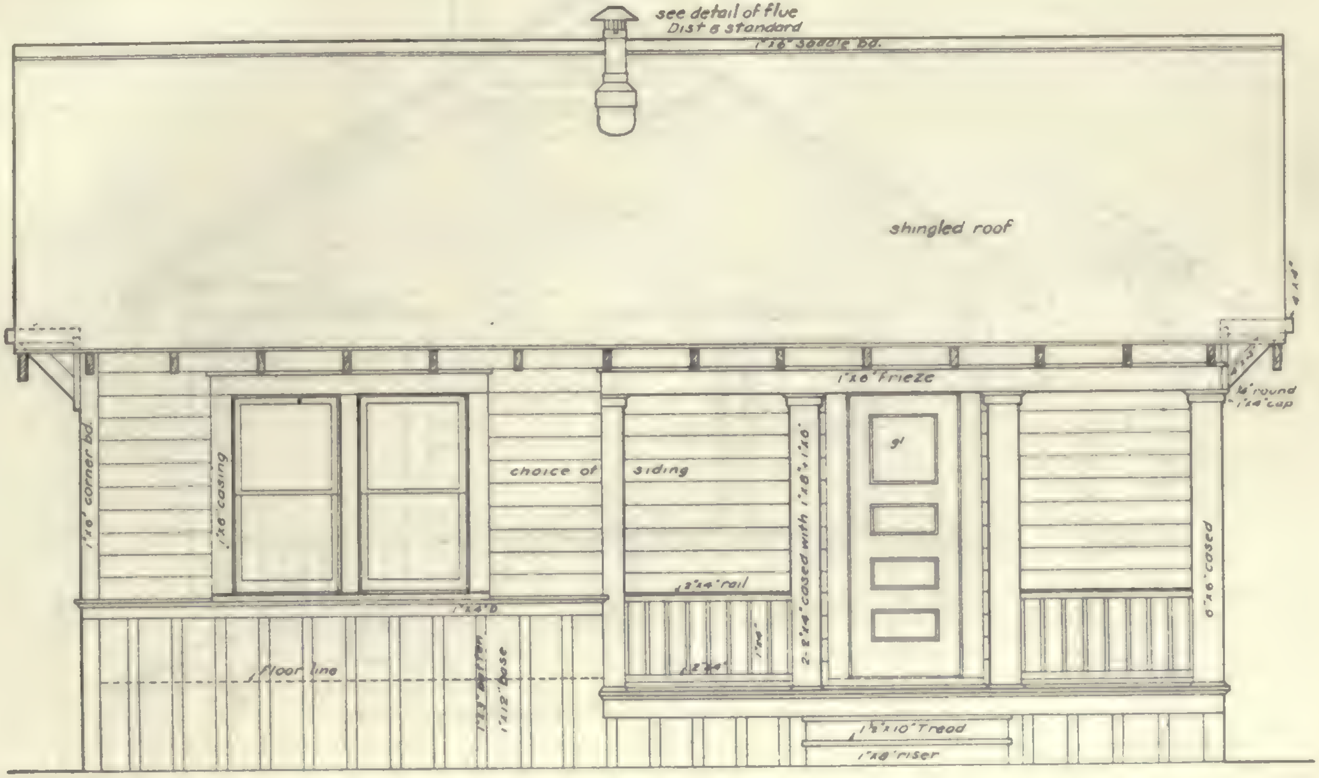


CROSS SECTION

LONGITUDINAL SECTION

scale

PLAN No. 1F
OFFICE & KITCHEN
16 0 X 20 0
U. S. FOREST SERVICE
DISTRICT No. 5
CDM 8 5-17

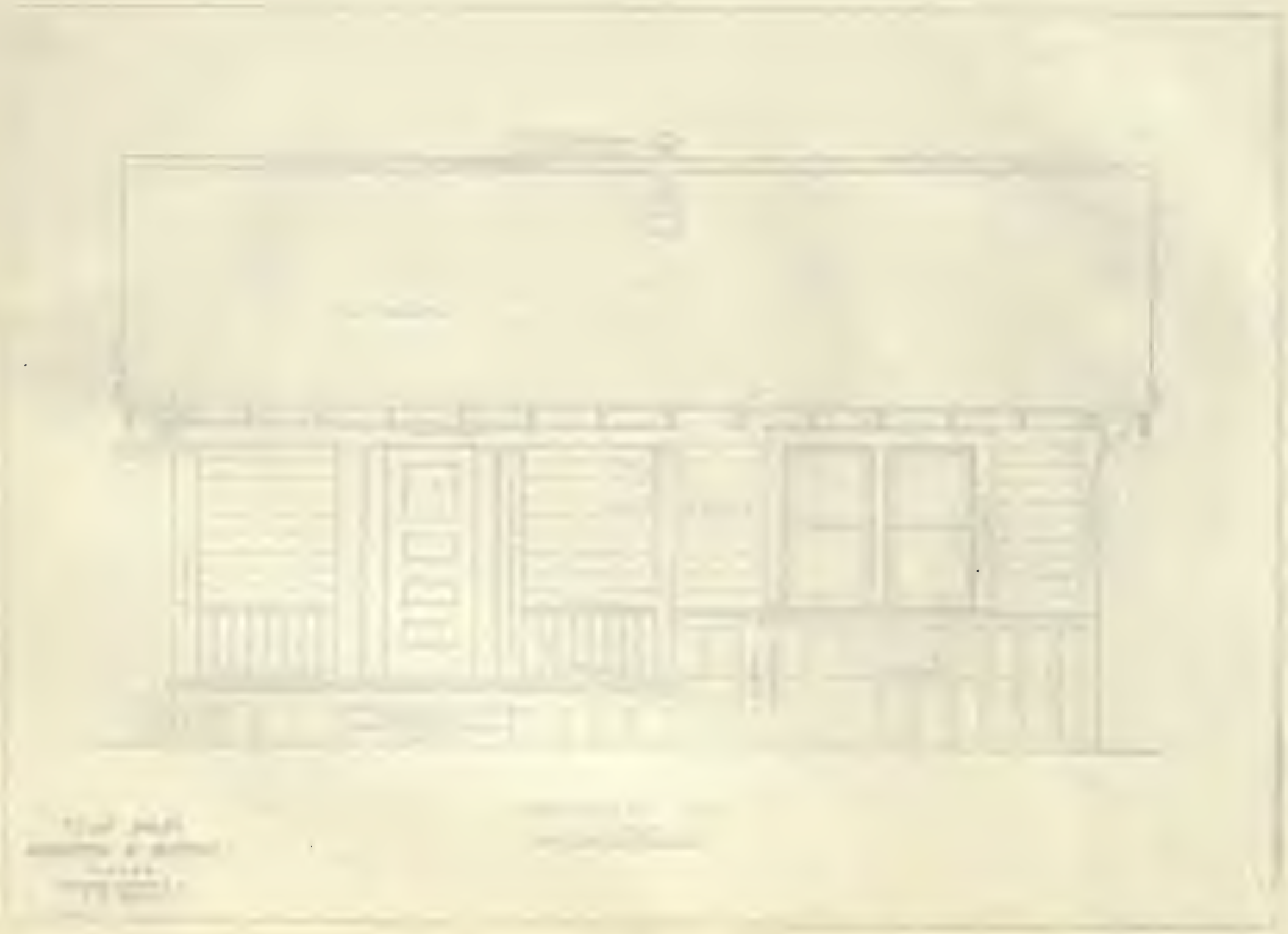


SIDE - ELEVATION

Scale

PLAN No. 1F
OFFICE & KITCHEN
18 0 X 26 0
U. S. FOREST SERVICE
DISTRICT No. 5

COM 54-1



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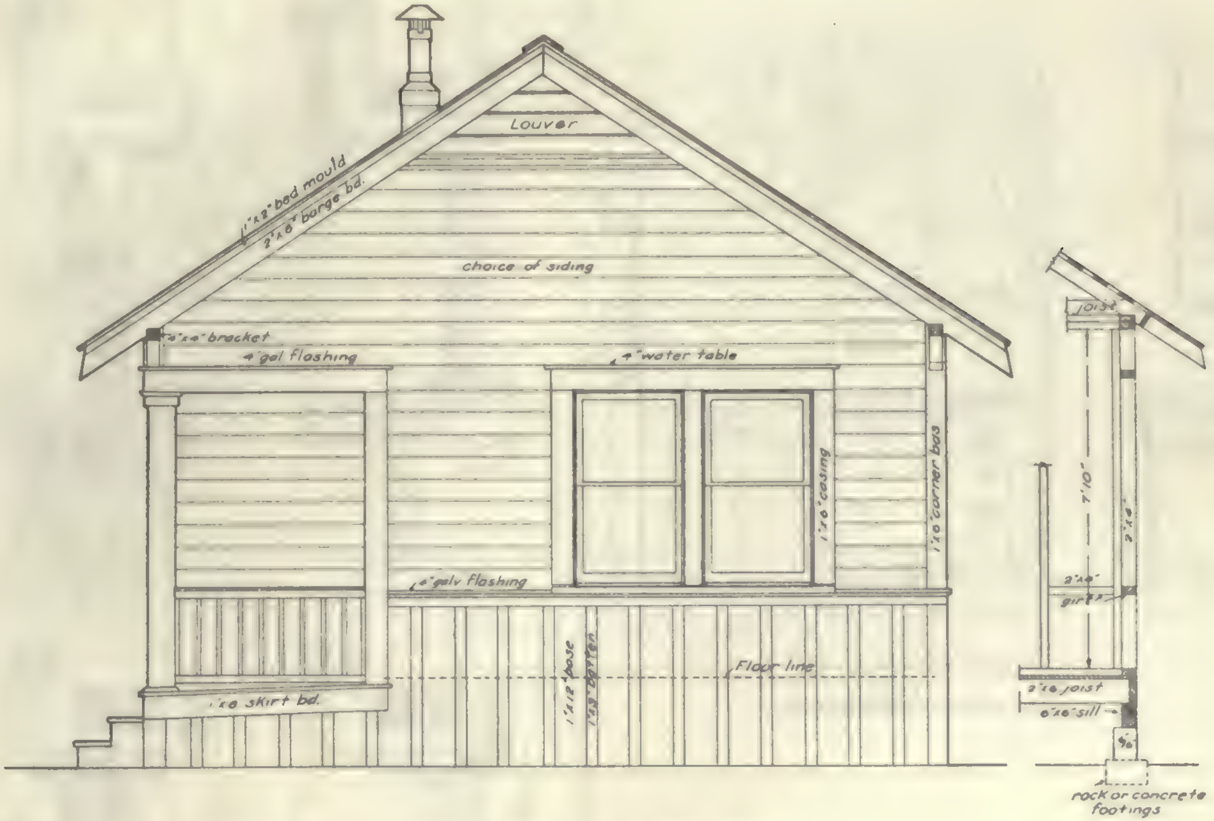
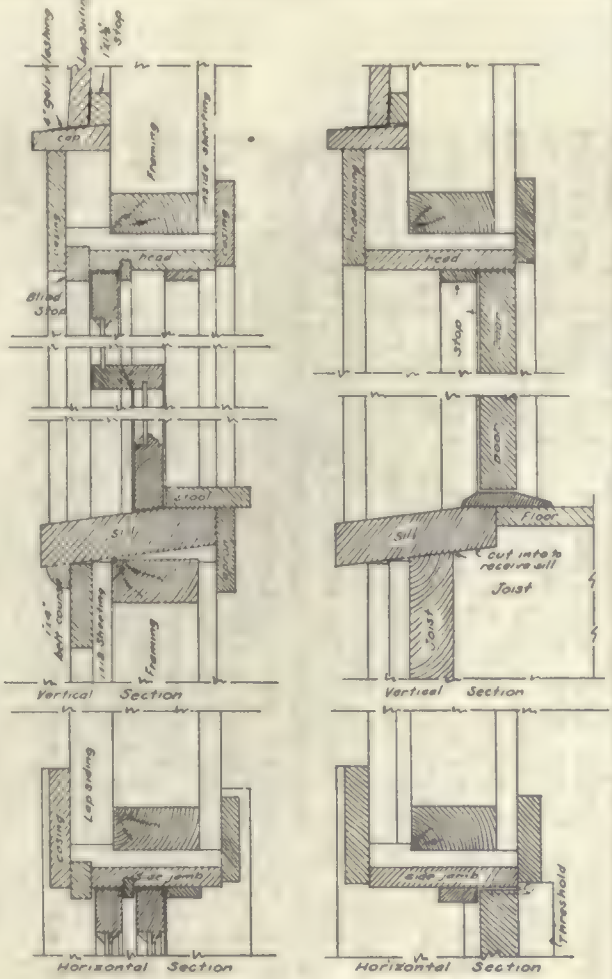


END ELEVATION

PLAN No. 1F
OFFICE & KITCHEN
18 0 X 26 0
U. S. FOREST SERVICE
DISTRICT No. 6

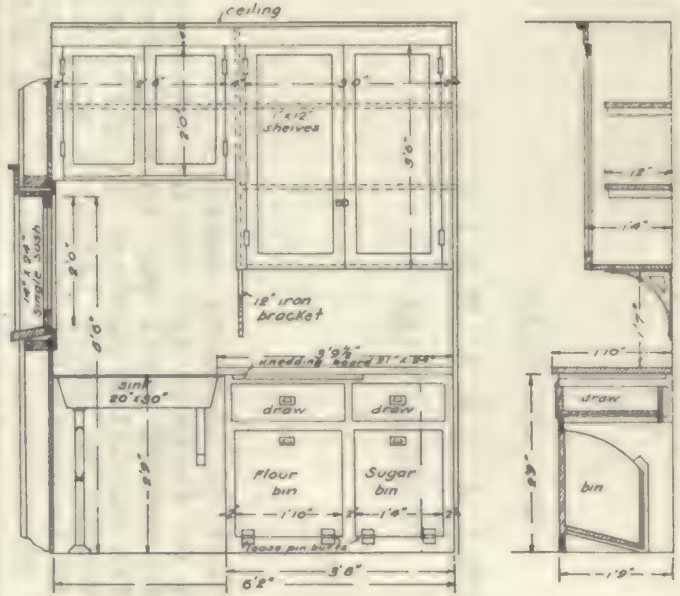
C.D.M. 5-3-17



DETAIL OF WINDOW FRAME DOOR FRAME

Scale

Note Sills and jambs of both door and windows are to be made narrower if rustic or boards and battens are used for outside cover



DETAIL OF KITCHEN CABINET

scale

5
5

PLAN No. 1F
OFFICE & KITCHEN
16 0 X 26 0
U. S. FOREST SERVICE
DISTRICT No. 5

COM 5-7-17

PLAN NO. 1-F

OFFICE AND KITCHEN

18'0" x 26'0"

Items preceded by the mark (*) are standard and are not subject to change or choice. Conditions of the local lumber markets, and the isolation of certain building sites from markets carrying a varied stock of lumber are factors which will govern selection of the type of outside and inside wall cover, trim and sizes and kinds of nails. Elevation of the particular building site will determine the slope of roof to use and the dimensions of the roof frame material to order. All items subject to change or choice are indicated by the mark (#). To prepare a complete order list, select the items marked (#) which, under the particular circumstances, will be best adapted for use at a given building site. Add such items to those marked (*). To all items of lumber add the specifications shown under "Grade and Species", and "Finish". For example, two pieces 4" x 6"-16' No. 1 Common, redwood, cedar, Douglas fir or pine, rough. To all items of hardware add only such descriptive matter as is necessary to adequately describe each item. For example, 2 pounds 30d. common wire nails - 3 pounds 30d. fine galvanized wire nails. Do not show on the order list the purpose for which the hardware items are to be used.

Estimated cost of construction - labor at $4.00 per day - $ 160.00.

Builder's List of Materials

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
		Sills and Floor Joists.			
* 3	4 x 6 - 18	Sills and girders	Redwood, Cedar or Douglas fir	Rough	108
* 4	4 x 6 - 14	" " "	" " " " "	"	112
* 4	4 x 6 - 12	" " "	" " " " "	"	96
* 7	2 x 6 - 12	Floor joists)	No. 2 Clear; D. F. 1st choice	"	84
*10	2 x 6 - 14	" ")	No. 1 Clear; W.FIR.F. 2nd "	"	140
* 4	2 x 6 - 14	Porch joists)	No. 2 Clear, Y. P. 3rd choice	"	42
* 4	2 x 6 - 14	End bridging)		"	56
* 2	2 x 6 - 14	Overhead porch supports)		"	28
* 2	6 x 6 - 16	Underpinning	Heart cedar or redwood	"	96

Note:- The item underpinning includes sufficient material shown in plan. The actual amount needed will depend upon the slope of the ground of each particular building site. Make due allowance for this item in the lumber order. If split or round material is used this item may be eliminated from the lumber list.

		Studding, Plates, Girts, Etc.			
* 1	6 x 6 - 8	Porch columns	Same as joists	Rough	24
* 2	2 x 4 - 16	" "	" " "	"	21
*38	2 x 4 - 16	Studs, walls & partitions	No. 1 Common, any species	"	608
* 8	2 x 4 - 12	Plates, top and bottom	" " " "	Sized	64
* 8	2 x 4 - 14	" " " "	" " " "	if	75
* 9	2 x 4 - 18	" " " "	" " " "	practic-	108
*16	2 x 4 - 16	False foundations, girts, gable studs and extras	" " " "	able	171
*10	2 x 4 - 16	Trimmers	" " " "		107
# 6	2 x 6 - 16	Diagonal braces for building designed to carry heavy snow loads	" " " "		96

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
	Wall covering (outside) Below Water Table (Standard regardless of cover above water table)				
*16	1 x12 - 16	Cover below water table	No. 1 Common, any species	Rough or S1S	256
*16	1 x 3 - 16	Battens " " "	" " " "	" " "	64
* 4	1 x 3 - 16	Water table	No. 2 Clear, " "	" " S4S	16
* 4	1 x 4 - 16	Belt course	" " " "	" " "	22
# 4	1" 1/4 round - 16	" "	" " " "	" "	

Note:- The first two items include sufficient siding for buildings having underpinning of the height shown on plan. The actual amount needed will depend upon the slope of the building site. Make due allowance for this item in the lumber order.

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
# 760 B. F.	1 x 8 6"	lap cover above water table	No. 1 Common, any species	Rough	760
		or			
# 725 "	6" or 8"	rustic above water table	("C" Grade California or (No. 3 Clear, Oregon, D. F.		725
		or			
# 300 "	1 x 4	sheeting, 8" to weather	No. 2 Common, any species		300
# 4750		shingles, 5" to weather	Star A Star, red cedar		

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
		Roof Frame and Cover, 1/4 Pitch, 2' Eaves and Gable Projections (Elevations up to 2000 feet)			
#14	2 x 4 - 18	Ceiling joists	Same as floor joists	Rough	168
#28	2 x 4 - 14	Rafters 2' O.C.	" " " "	"	262
# 2	1 x 8 - 16	Ridge pole	No. 1 Common, any species	"	22
# 3	1 x 6 - 16	Collar beams	Same as floor joists	"	24
# 3	1 x 6 - 12	Angle struts	" " " "	"	18
#300	B. F. 1 x 4	Roof sheeting 8" O. C. except eaves	No. 2 Common, any species	"	300
#6250	- -	Shingles (Roof) $4\frac{1}{2}$" to weather	Star A Star, Red Cedar		
# 4	1 x 6 - 16	Saddle boards	No. 1 Common, any species	"	32
# 6	1 x12 - 14	Sheeting 24" rafter projection	" " " "	" or S1S	84
# 6	1 x12 - 16	Sheeting 24" rafter projection	" " " "	" " "	96
# 4	2 x 6 - 14	Barge boards	" " " "	" " S4S	56
# 4	1 x 2 - 14	Barge board trim	No. 2 Clear, " "	" " "	10
# 4	1 x 6 - 12	Frieze boards gable ends	No. 1 Common, " "	" " "	24
# 4	1 x 4 - 14	Rafter frieze (between rafters)	" " " "	" " S1S	19
# 8	1 x10 - 12	Soffit for gable projection	" " " "	" " "	80
# 1	2 x 8 - 16	Sills for louvre	" " " "	" " S4S	22
# 3	1 x 8 - 12	Jamb and slats for louvre	" " " "	" " S1S	24

Note:- The preceding 8 items are listed rough or surfaced, etc., if rough lumber wall cover is used all will be rough; if rustic or drop siding wall cover is used, order surfaced as indicated. If shingle wall cover is used, ordinarily these items will be rough, but occasion may arise where preferable to surface as indicated. Substitute milled bed mould for barge trim when rustic wall cover is used, and add 4 pieces 12' long of 1" 1/4 round moulding for frieze trim.

No. Pcs.	Size	Purpose & Location	Grade & Species	Finish	Bd.Ft
		Roof Frame and Cover, 1/4 Pitch, 2' Eaves and Gable Projections - Continued (Elevations up to 2000 feet)			
# 120 B. F.	1 x 8	Sheeting 6" to weather gable ends	No. 1 Common, any species	Rough	120
	-	OR - If rustic or drop siding wall cover is used			
# 120 "	1 x 6 or 1 x 8	Rustic or drop siding gable ends cover	No. 2 Clear, any species		120
		OR - If shingle wall cover is used			
# 50 "	1 x 4	Sheeting for shingle gable ends	No. 2 Common, " "	"	50
#1000 -	-	Shingles 5" to weather	Star A Star, Red cedar		

No. Pcs.	Size	Purpose & location	Grade and Species	Finish	Bd.Ft.
		Roof Frame and Cover, 1/3 Pitch Roof, 18" Eaves and Gable Projections (Elevations between 2000 and 3500 feet)			
#14	2 x 6 - 18	Ceiling joists	Same as floor joists	Rough	252
#28	2 x 6 - 14	Rafters 2' O.C.	" " " "	"	392
# 2	1 x10 - 16	Ridge pole	No. 1 Common, any species	"	28
# 4	2 x 6 - 16	Collar beams	Same as floor joists	"	64
# 7	2 x 6 - 12	Angle struts	" " " "	"	84
# 3	1 x 8 - 12	King struts	" " " "	"	24
# 2	1 x 6 - 12	Rafter ties to joist near plate	No. 1 Common, any species	"	12
#300	B. F. 1 x 4	Sheeting (Roof) 8" O. C. except eaves	No. 2 " " "	"	300
#6500	- -	Shingles (Roof) 4½" to weather	Star A Star, Red Cedar		
# 4	1 x 6 - 16	Saddle boards (jection	No. 1 Common, any species	"	32
# 4	1 x12 - 14	Sheeting 18" rafter pro-	" " " "	" or S1S	56
# 4	1 x12 - 16	" " " "	" " " "	" " "	64
# 4	2 x 6 - 14	Barge boards	" " " "	" " S4S	56
# 4	1 x 2 - 14	Barge board trim	No. 2 Clear, " "	" " "	10
# 4	1 x 6 - 12	Frieze boards gable ends	No. 1 Common, " "	" " "	24
# 4	1 x 6 - 14	Rafter frieze (between rafters)	" " " "	" " S1S	28
# 4	1 x 8 - 12	Soffit for gable projection	" " " "	" " "	64

Note:- The preceding 6 items are listed rough or surfaced, etc., if rough lumber wall cover is used all will be rough; if rustic or drop siding wall cover is used, order surfaced as indicated. If shingle wall cover is used, ordinarily these items will be rough, but occasion may arise where preferable to surface as indicated. Substitute milled bed mould for barge trim when rustic wall cover is used, and add 4 pieces 12' long of 1" 1/4 round moulding for frieze trim.

No. Pcs.	Size	Purpose & location	Grade and Species	Finish	Bd.Ft.
# 120	B. F. 1 x 8	Sheeting 6" to weather gable ends	No. 1 Common, any species	Rough	120
		- OR - If rustic or drop siding wall cover is used -			
# 120	B. F. 1 x 6 or 1 x 8	Rustic or drop siding gable ends cover	No. 2 Clear, any species		120
		OR - If shingle wall cover is used			

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd. Ft.
		Roof Frame and Cover, 1/3 Pitch, 18" Eaves and Gable Projections - Continued (Elevations between 2000 and 3500 feet)			
# 50 B. F.	1 x 4	Sheeting for shingle gable ends	No. 2 Common, any species	Rough	50
#1250	- -	Shingles, 5" to weather	Star A Star, Red Cedar		

No louvre for buildings with 1/3 pitch roof where there is heavy snow fall or snow with heavy wind.

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.

Roof Frame and Cover, 1/2 Pitch Roof 18" Eaves and Gable Projections

(Elevations over 3500 feet)

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
# 14	2 x 6 - 18	Ceiling joists	Same as floor joists	Rough	252
# 28	2 x 8 - 16	Rafters 2' O. C.	" " " "	"	598
# 2	1 x10 - 16	Ridge pole	No. 1 Common, any species	"	28
# 6	1 x 8 - 16	Collar beams	Same as floor joists	"	64
# 6	1 x 8 - 14	Angle struts	" " " "	"	56
# 3	1 x 8 - 18	King struts	" " " "	"	36
# 3	1 x 6 - 16	Rafter ties to joist near plate	No. 1 Common, any species	"	24
#375	B. F. 1 x 4	Roof sheeting 8" O. C. except eaves	No. 2 " " "	"	375
#7250	- -	Shingles (Roof) 4½" to weather	Star A Star, Red Cedar		
# 4	1 x 6 - 16	Saddle boards	No. 1 Common, any species	"	32
# 4	1 x12 - 14	Sheeting 18" rafter projection	" " " "	"or S1S	56
# 4	1 x12 - 16	Sheeting 18" rafter projection	" " " "	" " "	64
# 4	2 x 6 - 16	Barge boards	" " " "	" " S4S	64
# 4	1 x 2 - 16	Barge board trim	No. 2 Clear, " "	" " "	11
# 4	1 x 6 - 14	Frieze boards gable ends	No.1 Common, " "	" " "	28
# 4	1 x 6 - 14	Rafter frieze (between rafters)	" " " "	" " S1S	28
# 8	1 x 8 - 14	Soffit for gable projection	" " " "	" " "	65

Roof Frame and Cover 1/2 Pitch Roof 18" Eaves and Gable Projections - Continued
(Elevations over 3500 feet)

Note:- The preceding 6 items are listed rough or surfaced, etc., if rough lumber wall cover is used all will be rough; if rustic or drop siding wall cover is used, order surfaced as indicated. If shingle wall cover is used, ordinarily these items will be rough, but occasion may arise where preferable to surface as indicated. Substitute 16' long of 1" 1/4 round moulding for frieze trim.

No. Pcs.	Size	Purpose & location	Grade and Species	Finish	Bd.Ft.
# 200 B. F.		Sheeting 6" to weather gable ends	No. 1 Common, any species	Rough	200
		OR - If rustic or drop siding wall cover is used -			
# 180 B. F.	1 x 6 or 1 x 8	Rustic or drop siding gable ends cover	No. 2 Clear, any species		180
		.OR - If shingle wall cover is used			
# 100 B. F.	1 x 4	Sheeting for shingle gable ends	No. 2 Common, " "	"	100
#1500	-	Shingles, 5" to weather gable ends	Star A Star, Red Cedar		

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
	Outside Trim				
# 1	4 x 4 - 20	4 Brackets 1/4 & 1/3 pitch roof	No. 1 Common, any species	Rough or S4S	27
# 1	2 x 4 - 12	4 Brackets " " " "	" " " "	" " "	8
	OR				
# 1	4 x 4 - 16)	6 Brackets 1/3 & 1/2 pitch	" " " "	" " "	22
# 1	4 x 4 - 14)	roof when no louvre is	" " " "	" " "	19
# 1	2 x 4 - 14)	used	" " " "	" " "	10
* 8	1 x 6 - 12	Corner boards	" " " "	" " "	48
	Note:- With rough lumber and shingle wall cover order above 6 items rough; and surfaced as indicated with rustic or drop siding wall cover. Four brackets on 1/4 and 1/3 pitch roofs with louvres both ends. Six brackets on 1/2 pitch roof - no louvres.				
	Porch Material				
* 59	1 x 4 - 12	Porch flooring - vertical grain	(No. 2 Clear, Oregon D. F. (or ("C" grade, California, (any species		236
#278	B. F. 1 x 4	Ceiling and short walls	" " " "		278
		OR - If rough lumber is used			
#225	B. F. 1 x12	Ceiling and short walls	No. 1 Common, any species	Rough or S1S	225
#225	lin.Ft 5/8 x 3	Battens	" " " "	" " S4S	57
* 4	1 x 8 - 14	Porch columns dress down	" " " "	" " "	38
* 4	1 x10 - 14	" " " "	" " " "	" " "	47
* 3	1 x 6 - 16	" frieze	" " " "	" " S1S	24
* 3	1 x 6 - 14	" soffit	" " " "	" " "	21
* 3	1 x 3 - 16	" frieze water table	" " " "	" " "	12
* 3	1 x 6 - 16	" skirt board	" " " "	" " "	24
* 1	1 x 4 - 16	" trim	" " " "	" " "	6
* 1	2 x 4 - 18	Top hand rail	No. 2 Clear, " "	" " S4S	12
* 1	2 x 4 - 18	Bottom hand rail	" " " "	" " "	12
* 4	1 x 4 - 16	Balusters	" " " "	" " "	22

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
	Steps				
* 2	$1\frac{1}{2}$x10 - 12	Treads	No. 2 Clear, any species	Rough or S4S	30
* 2	1 x 8 - 12	Risers	" " " "	" " "	16
* 1	1 x12 - 16	Stringers	" " " "	" " S1S	16
	Flooring.				
*	450 B. F.	Flooring, T & G Vertical grain	No. 2 Clear, Oregon, D. F.		450

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
Inside Walls and Ceiling.					
# 365	B. F. 1 x12	Ceiling	No. 1 Common, any species	Rough or S1S	365
# 365	Lin.Ft. 5/8 x 3	" battens	" " " "	" " S4S	792
# 52	1 x12 - 16	Wall (vertical)	" " " "	" " S1S	832
# 952	Lin.ft.5/8 x 3 "	battens	" " " "	" " S4S	238
		OR			
#1500	B. F. 1 x 4	T & G ceiling and wall cover	"C" Grade California any species or No.3 Clear, Oregon D. F.		1500
# 200	Lin.ft. 1" 1/4	round, corner trim at ceiling and vertical corners			
		OR			
#1400	B. F. 8"	Shiplap ceiling and wall cover	"C" Grade California, any species or No. 3 Clear, Oregon D. F.		1400
# 200	Lin.ft. 1" 1/4	round, corner trim at ceiling and vertical corners			
Inside Trim.					
# 7	1 x 6 - 16	Base	No. 2 Clear, any species	Rough or S4S	56
# 220	Lin.ft. 1" 1/4	round, at floor corners			
	or				
# 220	Lin.ft. 1 x 1	Strips, at floor corners	" " " "		

No. Pcs.	Size	Purpose & Location	Grade and species	Finish	Bd. Ft.
		Window and Door Frames - Complete including outside and inside casings, stops, blind stops, parting strips, aprons and stool if made on the job.			
# 2	2 x10 - 18	Sills if 1 x 8 lapped siding	No. 2 Clear, D. F. or Y. P.	S1S	60
# 2	2 x 8 - 18	Sills if rustic, shingles or boards and battens	" " " " "	"	48
# 2	1 x 8 - 18	Jambs if 1 x 8 lapped siding (doors)	" " " " "	"	24
# 2	1 x 6 - 18	Jambs if rustic, shingles or boards and battens	" " " " "	"	18
# 8	1 x 8 - 16	Jambs if 1 x 8 lapped siding (windows)	" " " " "	"	86
# 8	1 x 6 - 16	Jambs if rustic, shingles or boards and battens	" " " " "	"	64
# 4	1 x 6 - 18	Outside casings (doors)	" " " " "	"	36
# 7	1 x 6 - 16	" " (windows)	" " " " "	"	56
# 2	1 x 6 - 18	Jambs inside doors	" " " " "	"	18
# 6	1 x 4 - 18	Inside casings (doors)	" " " " "	S4S	36
# 7	1 x 4 - 16	" " (windows)	" " " " "	"	38
# 4	1 x 4 - 16	Stools and aprons	" " " " "	"	22
# 5	1 x 2 - 16	Blind stop	" " " " "	"	15
# 4	½ x 1 - 16	Parting bead	" " " " "	"	6
150	Lin.ft.	½ x 1½ Plain or O. G. stop (doors and windows)	" " " " "		

If mill or factory made frames can be purchased, it is advisable to buy them in lieu of the above list. See order list for doors and windows.

Mill Order List.

* 1 2'8" x 6'8" x 1", colonial one light 24" x 26", 21 oz. glass, 3 cross panel door
* 2 2'8" x 6'8" x 1½", " 5 cross panel door (front door)
* 1 2'6" x 6'8" x 1½", " " " "
* 6 2'6" x 4'6" x 1½", Lip rail, 2 lights, 21 oz. glass windows (no. weights)
* 1 2'0" x 2'0" x 1½", single sash, 1 light
* 1 1'2" x 2'0" x 1½", " " 1 light (to be made to order)

Note:- If mill or factory made frames can be purchased, order #2 frames for
# 2'8" x 6'8" x 1½" outside doors with sill. Complete out and inside trim
# 1 frame for 2'8" x 6'8" x 1½" inside doors, no sill. Complete out and inside trim.
# 1 " " 2'6" x 6'8" x 1½" " " " "
# 2 frames, double for 2'6" x 4'6" lip rail window " " " " "
# 2 " single " 2'6" x 4'6" " " " " " " " "
# 1 frame " sash 2'0" x 2'0" sash to swing out " " " " "
# 1 " " " 1'2" x 2'0" " " " in " " " " "

Note:- Specify thickness of walls for both inside and outside frames and submit with order blue print of detail No. 6.

Specify 1" x 6" for outside casings and 1" x 4" for inside casings.

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
	Kitchen Cabinet (See Detail)				
* 1	1 x 6 - 16	Kitchen cabinet	No. 2 Clear, any species	S4S	8
* 1	½ x12 - 12	" "	" " " "	"	12
* 3	1 x12 - 16	" "	" " " "	"	48
* 1	1½x22 - 4	Drain board, vertical grain	No. 1 " " "	"	11
* 1	1" 1/4 round, 16 feet				
# 1	pr. 2'6" x 2'	casement sash in pairs for cupboard doors			
# 1	" 3' x 3'6"	" " " " " " "			
		OR			
# 1	1¼x12 - 12	For casement sash rail	No. 1 Clear, any species	"	15
# 3	½ x 4 - 16	" " "	panels Ceiling T & G beaded	"	16

Hardware List.

* 8#	30d.	Common wire nails, frame
*25#	20d.	" " " "
*100#	10d.	" " " "
* 4#	3d.	Fine galvanized shingle nails, for roof
* 5#	2d.	" " " " " eaves and flashing
* 2#	4d.	Finish, interior use
*12#	8d.	Casing, " "
* 4#	6d.	" " "
* 8#	10d.	" " "
#25#	10d.	Common nails for outside walls above water table, if 1 x 8 lapped
#25#	8d.	" " " " " " " " " rustic
#12#	8d.	" " " " " " " " " shingled
#18#	3d.	Fine galvanized nails " " " " " " "
#18#	8d.	Common nails, if interior walls and ceiling 1 x 12
#15#	6d.	Casing " " " " " " T & G or shiplap
# 8#	6d.	" " " " " " " for battens
110		Linear feet galvanized iron flashing 30 gauge 4" wide
2		Cupboard door catches # 4800 A. C.
4		" " hinges # 1474 -D2 - 2"
4		Drawer pulls, # 5074 A. C.
2 pr.		2" loose pin butts for flour bin A. C.
2 "		2½" " " " A.C. for two single sashes.
2 "		4" hooks and staples " " " "
12 "		Spring bolts for double sash
4		Rim latches # 8052, knob #9241
4 pr.		3½" x 3½" butts
2		U. S. Forest Service rim latches

Numbers following items of hardware are Pacific Hardware & Steel Company's Catalogue numbers. See hardware list in Building Material Section.

FLUE MATERIAL

The builder shall always submit Details No. 6A or 6B with orders for flue materials. This is important.

Irrespective of the pitch of roof, the articles following, before which the mark (*) appears, are to be ordered:

* 1 8" Terra Cotta starting plate
* 2 Terra cotta 8" Tees 12" long
* 2 8" Terra cotta socket pipes
* 1 8" " " straight pipe without socket
* 1 Galvanized iron, 26 gauge, drip ferrule (See Cut)

1/4 Pitch Roof -

1 Galvanized roof plate, 26 gauge, with pipe projection to fit around 8" terra cotta pipe for 1/4 pitch roof (See Detail of District 5 Standard Flue)

8 Foot length, 26 gauge, galvanized pipe made so as to slide inside 8" terra cotta pipe. On bottom it shall be made to fit on to standard 6" black iron stove pipe. On its top shall be riveted a plain, convex storm hood of standard design.

1/3 Pitch Roof -

1 Galvanized roof plate, 26 gauge, with pipe projection to fit around 8" terra cotta pipe for 1/3 pitch roof (See Detail of District 5 Standard Flue)

9 Foot length, 26 gauge, galvanized pipe made so as to slide inside 8" terra cotta pipe. On bottom it shall be made to fit on to standard 6" black iron stove pipe. On its top shall be riveted a plain, convex storm hood of standard design.

1/2 Pitch Roof -

1 Galvanized roof plate, 26 gauge, with pipe projection to fit around 8" terra cotta pipe for 1/2 pitch roof (See Detail of District 5 Standard Flue)

12'6" Length, 26 gauge, galvanized pipe made so as to slide inside 8" terra cotta pipe. On bottom it shall be made to fit on to standard 6" black iron stove pipe. On its top shall be riveted a plain, convex storm hood of standard design.

1 8" socket terra cotta pipe

* 1# Cement and 1.3 clean sand for each joint of terra cotta

Where snow fall exceeds 30", install the flue protector shown in Detail No. 6B. The builder shall add material necessary to build the protector.

Paint.

* 6 gal. Regulation outside body gray paint
* 3 " " " trim white "
* 6 " " " roof green "
* 2½ " floor paint
* 2# putty
* 6 pcs. sand paper No. 1

Inside paint to be chosen by occupant. (See manual for amounts.)

# 1½ gal. Boiled linseed oil
# ½ " Turpentine

If Laird & Sinclair's paint is used, omit linseed oil and turpentine and add-

# 1 gal. Aroturps for each 5 gal. of outside paint on order list.

Cement.

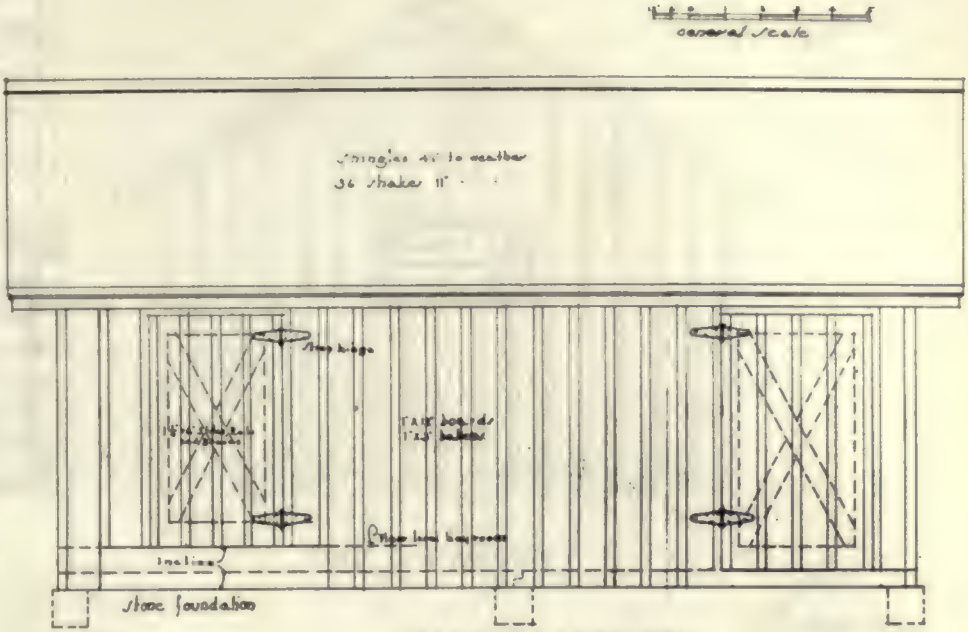
See specifications in Concrete Section if concrete foundations are practicable for this building.

Specifications.

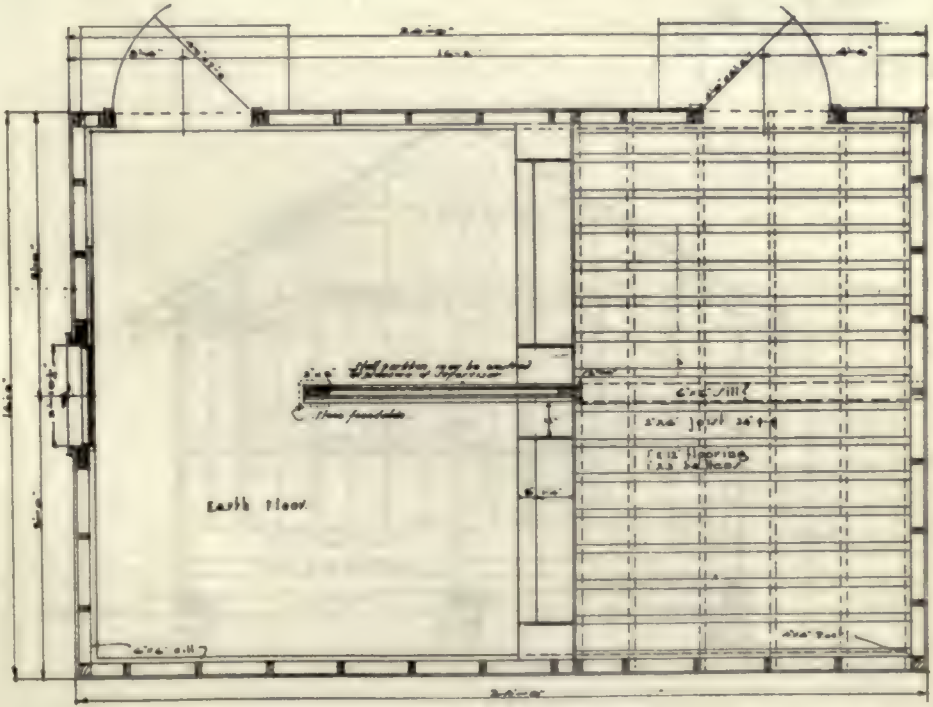
For specifications applicable to this plan - see pages 18-27 of Plan 1-C.

①

PLAN · NO 24
FOUR HORSE FRAME BARN



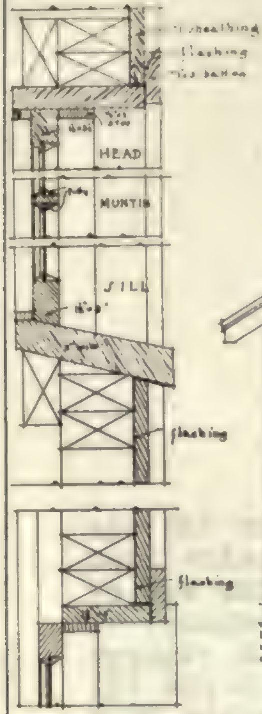
SIDE · ELEVATION



· PLAN ·

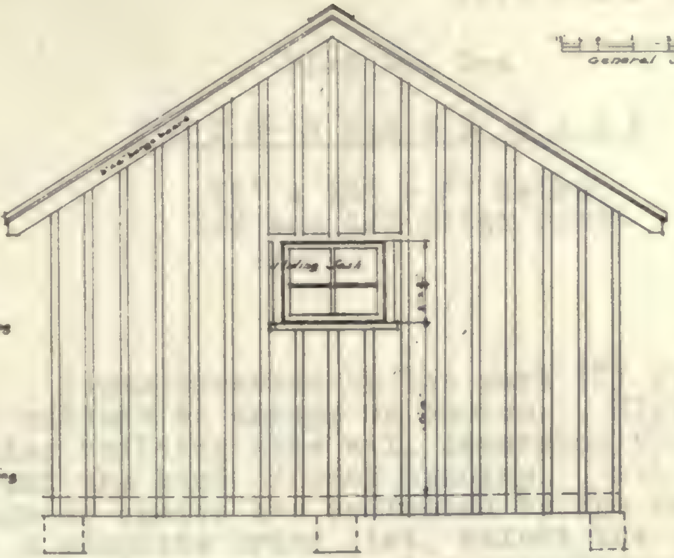
PLAN NO 2A
FOUR HORSE FRAME BARN

General Scale

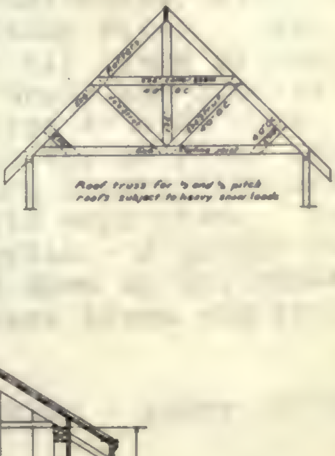


JAMB

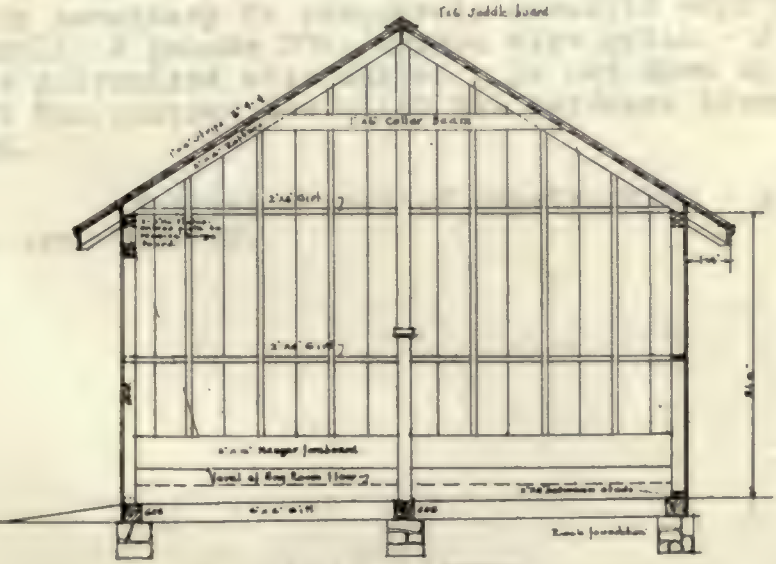
DETAIL OF WINDOW



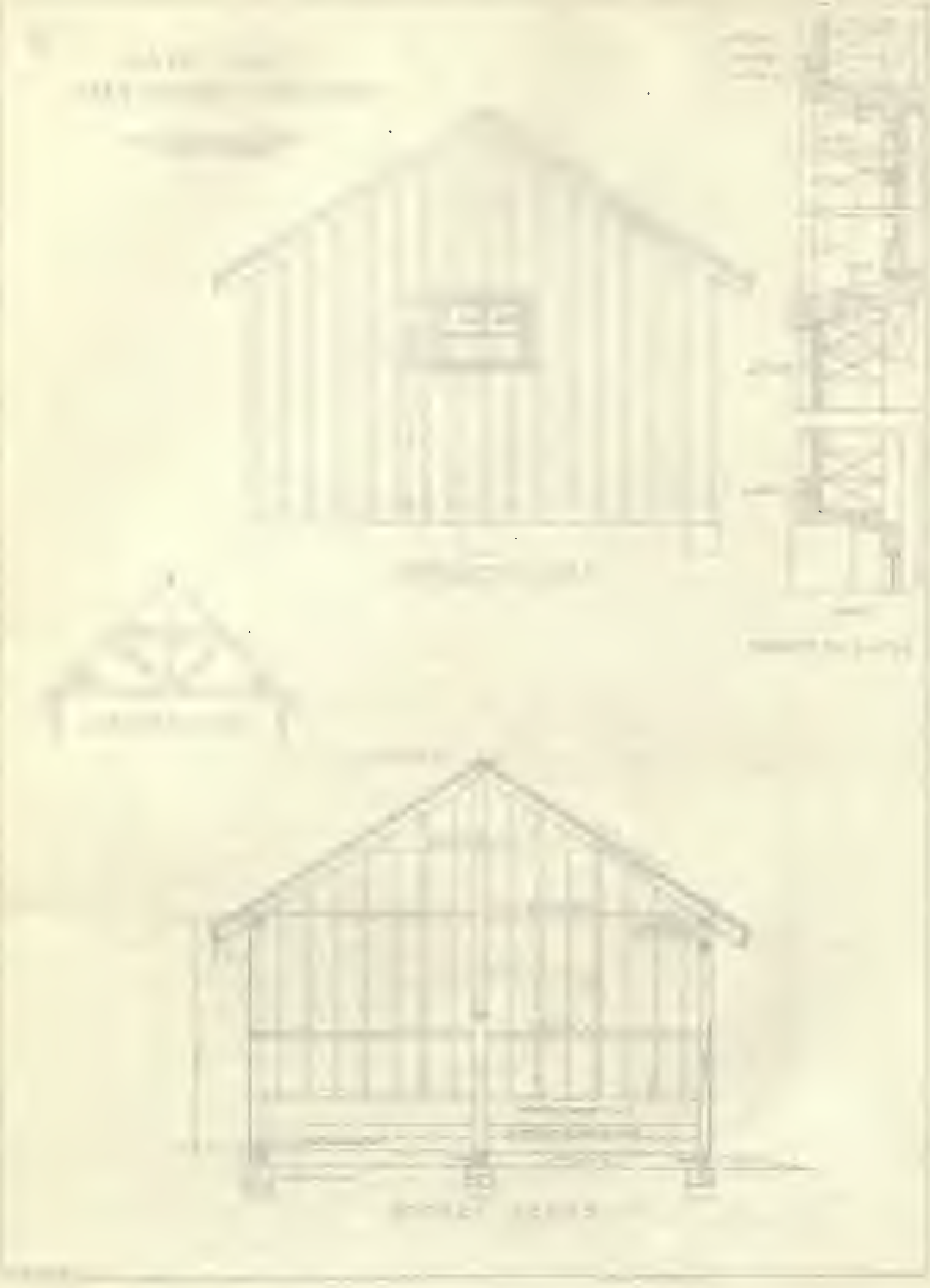
END ELEVATION



Roof truss for ⅓ and ½ pitch roofs subject to heavy snow loads



CROSS SECTION



PLAN NO. 2-A

FOUR--HORSE BARN

16' x 24' - 8' Walls
1/3 and 1/2 Pitch Roof

Items preceded by the mark (*) are standard and are not subject to change or choice. Elevation of the particular building site will determine the slope of roof to use and the kind of roof bracing. All items subject to change or choice are indicated by the mark (#). To prepare a complete order list, select the items marked (#) which, under the particular circumstances, will be best adapted for use at a given building site. Add such items to those marked (*). To all items of lumber add the specifications shown under "Grade and Species", and "Finish". For example, two pieces 4" x 6" - 16' No. 1 Common, redwood, cedar, Douglas fir or pine, rough. To all items of hardware add only such descriptive matter as is necessary to adequately describe each item. For example, 2 pounds 30d. common wire nails - 3 pounds 30d. fine galvanized wire nails. Do not show on the order list the purpose for which the hardware items are to be used.

Estimated cost of construction - labor at $4.00 per day - $80.00.

Builder's List of Materials

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
	Sills				
* 5	6 x 6 - 12	Sills	(1st choice, Ht.G. or RW	Rough	180
* 2	6 x 6 - 16	"	(2nd " D.F., W.F., or R.F.	"	96
			(3rd " Y. P.		
#	6 x 6	Underpinning - Depends upon location. Builder shall include amount needed. See specifications.			
	Studs, Plates, Joists, Etc.				
* 2	4 x 4 - 16	Corner studs	No. 1 Common, any species	"	43
*28	2 x 4 - 16	Studs	" " " "	"	298
* 8	2 x 4 - 12	Plates	" " " "	"	64
* 4	2 x 4 - 16	"	" " " "	"	43
* 4	2 x 4 - 16	Door & window trimmers	" " " "	"	43
* 6	2 x 6 - 16	1st floor joist	" " " "	"	96
* 2	2 x 6 - 12	Bridging	" " " "	"	24
* 7	2 x 4 - 12	Girts	" " " "	"	42
	Sheeting, Floor, Walls, Etc.				
*50	1 x12 - 18	Outside walls	No. 1 Common, any species	"	936
*800	Lin.Ft. 1 x 3	Battens "	" " " "	"	200
* 4	1 x 6 - 18	Corner boards	" " " "	"	36
* 8	1 x12 - 16	Flooring	" " " "	"	160
*190	Lin.Ft. 1 x 3	Battens for floor	" " " "	"	48
* 4	1 x 12	For partition (Partition goes to top of manger)	" " " "	"	64

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
Roof - 1/3 Pitch (For elevation up to 2000 feet)					
#26	2 x 4 - 12	Rafters	No.2 Clear, D. F.,W.F. or Y.P.	Rough	208
#16	1 x 6 - 16	Ceiling joists	" " " " " "	"	88
* 4	2 x 6 - 14	Barge boards	No. 1 Common, any species	"	56
* 4	1 x 2 - 14	" " trim	" " " "	"	10
* 4	1 x 6 - 14	Gable frieze	" " " "	"	28
* 4	1 x 6 - 14	Rafter end trim	" " " "	"	28
# 6	1 x 6 - 16	Collar beams	" " " "	"	48
* 4	1 x12 - 14	Lookout covering	" " " "	"	56
* 4	1 x 6 - 14	" "	" " " "	"	28
	1 x 4	Sheeting 8" O.C.	" " " "	"	280
* 4	1 x 8 - 14	Ridge board	" " " "	"	38
#5000	- - -	Shingles 4½" to weather	Star A Star red cedar		
* - -		If shakes are to be used, consult "Shake Table" No. B.M.-2 for amounts including sheeting and nails			
#56	pcs. - - -	6'0", 26 gauge galvanized corrugated iron roofing			
#27	Lin. Ft. -	26 gauge plain galvanized iron capping			
Roof - 1/3 Pitch (For elevation from 2000 to 3500 feet)					
#26	2 x 6 - 12	Rafters	(No. 2 Clear, D. F. 1st choice (" " W. F. 2nd " (" " Y. P. 3rd "	" " "	312
#11	2 x 6 - 16	Ceiling joists	Same as rafters	"	176
# 6	1 x 8 - 16	Collar beams	" " "	"	64
# 3	1 x 6 - 12	King struts	" " "	"	18
#11	1 x 8 - 12	Angle struts	" " "	"	88

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
		Roof - 1/2 Pitch (For elevations over 3500 feet)			
#26	2 x 6 - 14	Rafters	(No. 2 Clear, D. F. 1st choice (" " W. F. 2nd " (" " Y. P. 3rd "	Rough " "	364
#11	2 x 6 - 16	Ceiling joist	Same as for rafters	"	176
# 4	1 x 6 - 16	Rafter ties	" " " "	"	32
# 6	2 x 6 - 16	Collar beams	" " " "	"	96
#11	2 x 6 - 12	Angle struts	" " " "	"	132
# 6	1 x 6 - 16	King struts	" " " "	"	48
#		Sheeting 8" O.C.	No. 1 Common, any species	"	325
6000	- -	Shingles 4½" to weather	Star A Star red cedar		
#28 pcs.	- -	6'0", 26 gauge galvanized corrugated iron roofing			
#28 "	- -	7'0" 26 " " " " "			
#27 Lin. Ft.		26 gauge plain galvanized iron roof capping			
		Manger and Stalls.			
* 1	2 x 8 - 16	Rope cross piece	No. 1 Common, any species	"	22
* 6	2 x 4 - 16	Manger and stall frame	" " " "	"	64
* 5	1 x12 - 16	Stall and feed boxes	" " " "	"	80
* 6	1 x12 - 12	Stall partition	" " " "	"	72
		Feed Racks			
# 2	2 x 6 - 16	Top and bottom cleat	No. 1 Common, any species	"	32
# 6	1 x 4 - 16	Slats 10" O.C.	" " " "	"	32

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
Grain Box					
* 3	2 x 4 - 16		No. 1 Common, any species	Rough	32
*14	1 x 8 - 16	Shiplap	("C" Grade, California	S1S	150
			(No. 3 Clear, Oregon D. F.	"	

See Detail of Grain Box, Cut 6-E

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
Doors and Windows					
* 3	1 x 6 - 12	Door cleats	No. 1 Common, any species	Rough	18
* 1	2 x10 - 4'	Window sill	" " " "	"	7
* 1	1 x12 - 12	" frame	" " " "	"	12

Hardware List

#18#	3d. Fine galvanized iron shingle nails
*10#	8d. Common nails
*100#	10d. " "
*20#	20d. " "
* 5#	30d. " "
* 2#	8d. Finish nails
* 2	Pr. - 10" strap hinges and screws
* 2	" - 4" " " " " grain box
* 2	- - - 8" hasps and staples
* 1	- - - 4 light, 10 x 14 single sash
# 6#	2d. Galvanized roofing nails for use with corrugated roofing
# 4#	No. 8 Lead washers

Paint

*	6	Gal.	Standard wall paint
*	4	"	" roof "
*	1	"	Outside white for trim
#	1	"	Linseed oil - for use with oil paint. Not for use with Laird & Sinclair paint
#	$\frac{1}{4}$	"	Turpentine - " " " " " " " " " " " "
#	1	"	Aroturps - for use with Laird & Sinclair paint
#	1	"	" to each 5 gallons of paint on list.

SPECIFICATIONS

FOR

BARNS

PLAN NO. 2-A

These specifications are intended to embrace all material necessary in the erection and completion of the building in all its parts, and to furnish such instructions as appear necessary to give the builder a general idea of the plan. Variations due to different locations and accessibility of lumber markets have been considered and estimates prepared.

The general plan as regards construction of frame and other vital parts of the structures is to be followed unless permission to deviate from the plans and specification has first been secured from the District Forester. Deviations of minor consequence, however, to take care of unforeseen local conditions and circumstances may be made by the builder.

EXCAVATION.

Excavation for the foundation of the building shall be carried down to solid earth. The bottom of the excavation shall be level and smooth. When necessary to grade into unlevel ground for the purpose of providing a level building site, the slopes of the excavations resulting must clear the sides of the building by at least 3 feet. If necessary, provision should be made to prevent earth caving from the embankment from contacting with the sills. If foundation posts are of wood, they too should be protected.

FOUNDATION.

Do not place foundation blocks or underpinning further apart than 7 feet on center. Where snow loads are excessive or the ground is not firm, place foundation blocks or underpinning on 4 foot centers under all outside sills, on 6 foot centers under all exterior sills and girts. Where underpinning on short centers are necessary, add sufficient material to the lumber order list to provide for them.

Foundations should be either of -

(a) 6" x 6" heart cedar, redwood or Douglas fir underpinning, set upon substantial flat stones of sufficient thickness to project at least 4 inches above the ground. Wood blocks should never be used for footings under foundation posts.

(b) If substantial stones are not available, a masonry footing should be provided. For masonry use only hard stones, preferably flat ones. All should be carefully imbedded on their broadest faces in mortar of 1 part cement and 2 parts coarse, clean, sharp sand. Each layer should be well filled and flushed up on both sides and firmly bonded together. The tops should be made level to receive the underpinning. See Table No. C-4.

(c) Large stones of sufficient thickness to raise the sill to a height of at least 12 inches above the ground.

(d) Blocks of masonry or concrete at least 12 inches high, 10 inches wide on top and 16 inches square at the bottom. The top of concrete and masonry blocks should be made level to receive the sills. See Concrete Section and Table No. C-4.

MATERIALS.

All structural materials should conform as closely as possible to the specifications given in the builder's list and lumber order list. That minor deviations must sometimes be made is recognized as unavoidable.

SILLS.

Should preferably be of cedar or redwood. Douglas fir may be used as a second choice.

Rectangular sills should be laid with the narrow face up.

Sills at corner should be halved together. When two or more pieces are necessary to form the total length of sill a splice should be made on the foundation supports, as indicated on the plan (see Cut No. B.M.-9

Two or more joints should not occur on the same line of foundation posts. Arrange to have the splices made over foundation posts of different sets.

FLOOR JOISTS, STUDDING, BRIDGING, ETC.

Floor joists should be of selected sticks, straight grain and free from all knots larger than 1 inch in diameter. 1st choice being Douglas fir, 2nd choice white fir, 3rd choice yellow pine. Studding, headers, trimmers, plates, etc., may be of any straight grain material free from loose knots and knots which materially weaken the stick. Lay floor joists directly upon the sills. Where two joists form the span, use the lap joint; in all cases place the bow of the joists up. Place solid 2" x 6" bridging at the ends of each joist.

Corner studs should be 4" x 4". The plan indicates methods of placing studs.

Headers over window openings and door openings should be double. If shingle siding is used double trimmers also.

Girts of 2" x 4" scantling should be placed horizontally in all outside walls midway between the top and bottom plates.

Place ceiling joists directly over plates. Nail them securely to the rafters and toe nail them to the plate. If the building will be subject to snow load for ceiling joists, give particular care to the selection of good straight grain sticks free from knots larger than 1 inch in diameter and other imperfections that would weaken the stick Use 5 - 20d. wire nails for nailing the ceiling joist to the rafters and 2 - 20d. wire nails to toe nail them to the plate

ROOF.

Materials for roofs of different pitches are provided in the list. Use within the respective ranges of elevations the roofs of stated pitches.

Exception to the above should occur only where snowfall is not a source of hazard as on the southern Forest and on the Modoc.

Roof trusses should be well nailed with 10d. nails in 1 inch members and 20d. nails in 2 inch members. Do not over-nail. Five nails in surface 6" x 6" are enough.

Rafters and other members of the roof frame should be of selected straight grain lumber; 1st choice Douglas fir, 2nd choice white fir, 3rd choice yellow pine, free from knots and other imperfections. Too much attention cannot be given to the selection of the best sticks of the lumber order for rafters.

Care should be taken to cut the rafters true in order that they rest firmly on the plate, meet squarely at the apex of the roof.

Roof projections should be sheeted solid with 1" x 12" rough or dressed lumber.

Rafter ends should be finished in the manner illustrated by the diagram "Section".

Use for roof covering either -

(1) Star A Star red cedar or redwood shingles.

(2) Shakes of white fir or sugar pine.

(3) Galvanized iron (see B.M. Page 8).

(4) Lay shingles 4½ or 5 inches to weather on sheeting 8 inches on center. Nail them with 3d. fine galvanized shingle nails. Lay the bottom course of shingles double and project it 1½ inches beyond the sheeting. Allow a 1 inch projection of shingles over the barge board trim. Table No. B.M.-2 gives data on shakes. If shakes are used allow 1½ inches projection at eaves and 1 inch projection over barge board trim.

The ridge of the roof should be finished with 1" x 6" excepting in cases where galvanized iron roofing is used. With it, use galvanized ridge capping.

SIDING.

Use 1" x 12" boards and 1" x 3" battens, free from loose knots and all knots of a greater diameter than 1½ inches. Boards should also be free from weather check, rot, disfigurements and large pitch pockets.

Finish the corners with 1" x 4" boards.

FLOOR.

Floor for hay room only is provided. No floor in stall section.

STALLS, PARTITIONS, ETC.

Place all stalls, feed boxes, partitions, etc. as shown on the drawing.

Partitions between hay room and stall section shall extend only to top of manger, or if racks are used a point about half way to the top of the racks.

Racks for holding hay may be used if desired. Where loose hay is to be fed, racks are especially advantageous.

If a grain box is needed follow the plan shown in Detail No. 6E.

DOOR AND WINDOW FRAMES.

Make the window frames as shown in the detail drawing of them.

HARDWARE.

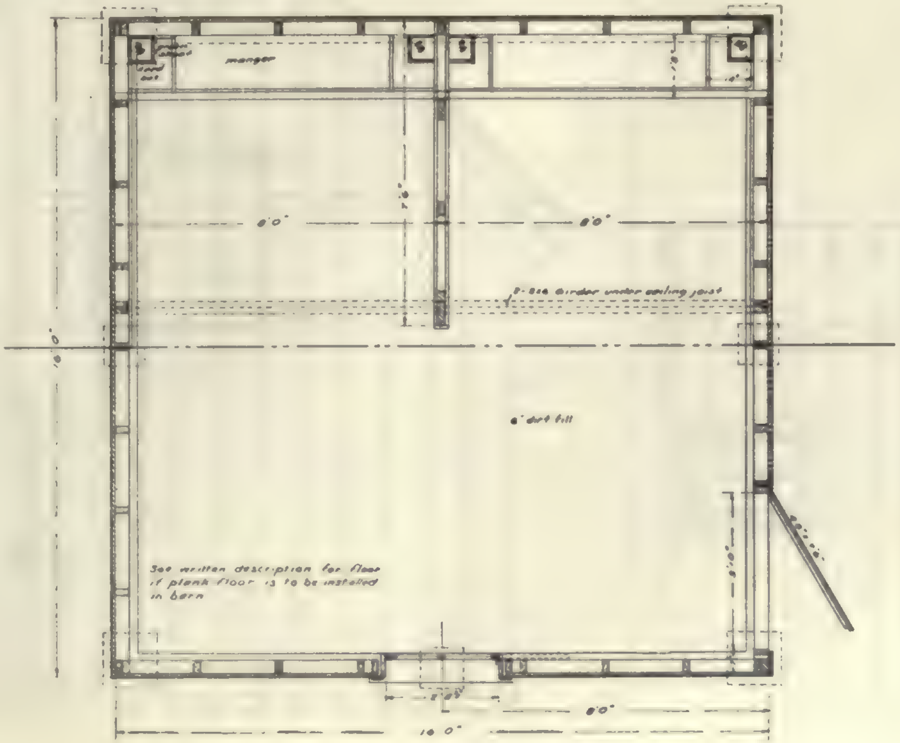
All numbers following articles of hardware are those of the Pacific Hardware & Steel Company.

PAINTING.

Color - Body - Standard gray, 2 coats
Roof - " green, 2 "
Trim - " white, 2 "

If the structural material is dry apply the first coat as soon as the siding and roof are placed. If the lumber and roofing are not dry, apply paint as soon as the condition of the lumber will permit. Put on the second coat as soon as the first coat is dry. Do not paint if lumber is not thoroughly dry or if the surface is damp from rains, fog, frost, etc. Do not paint during damp weather. See the Paint Section of the Circular.

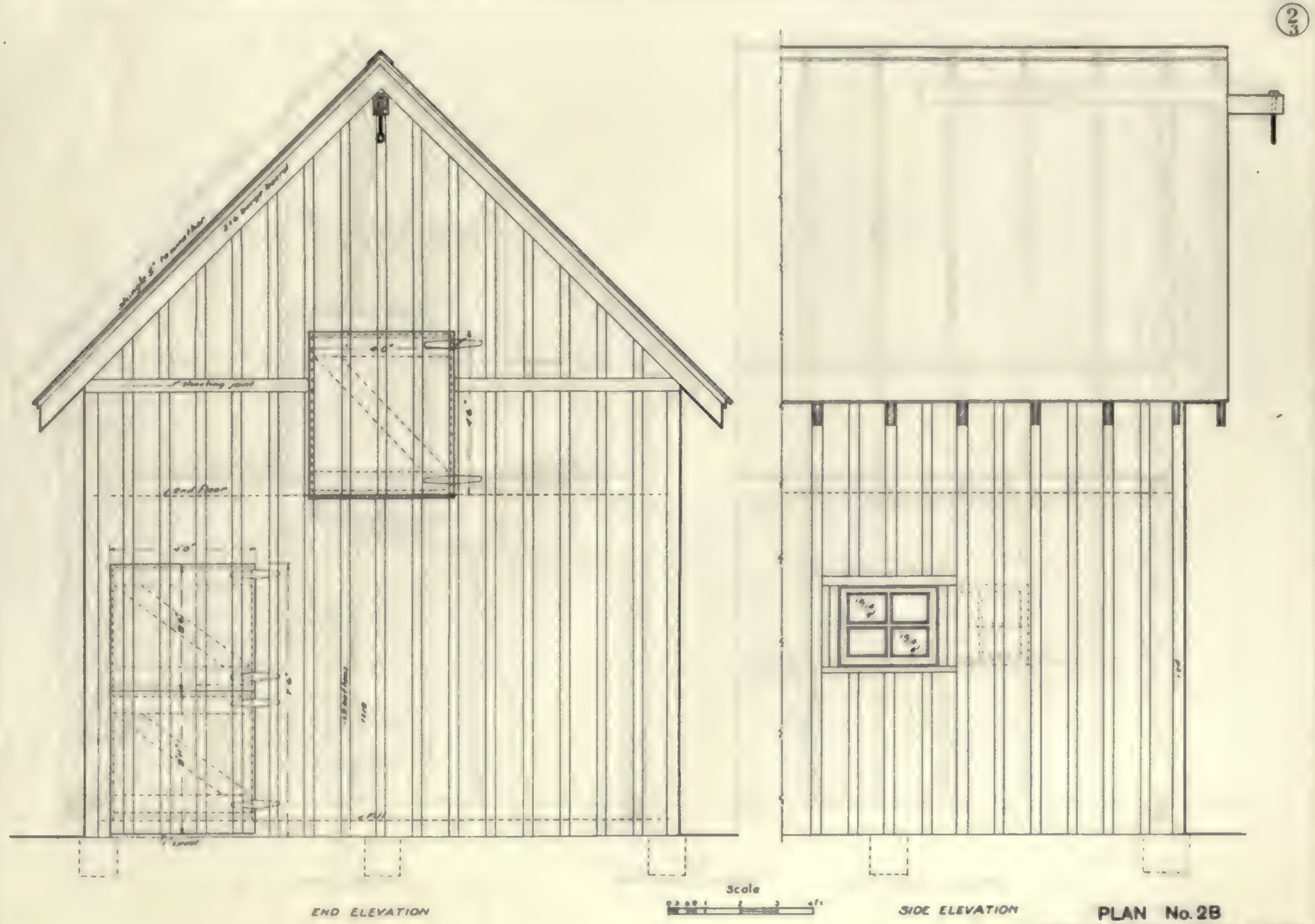
①/③



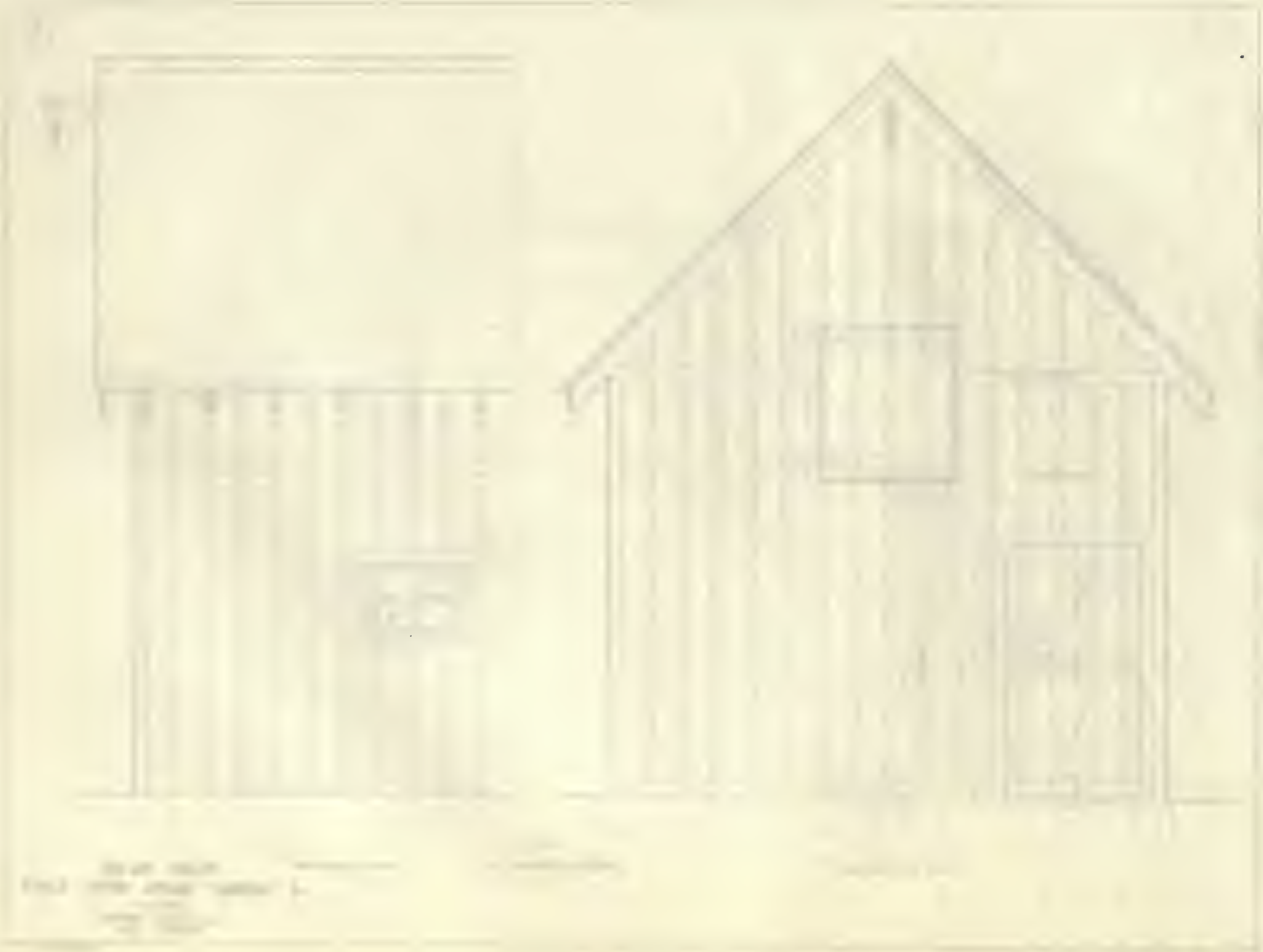
See written description for floor if plank floor is to be installed in barn

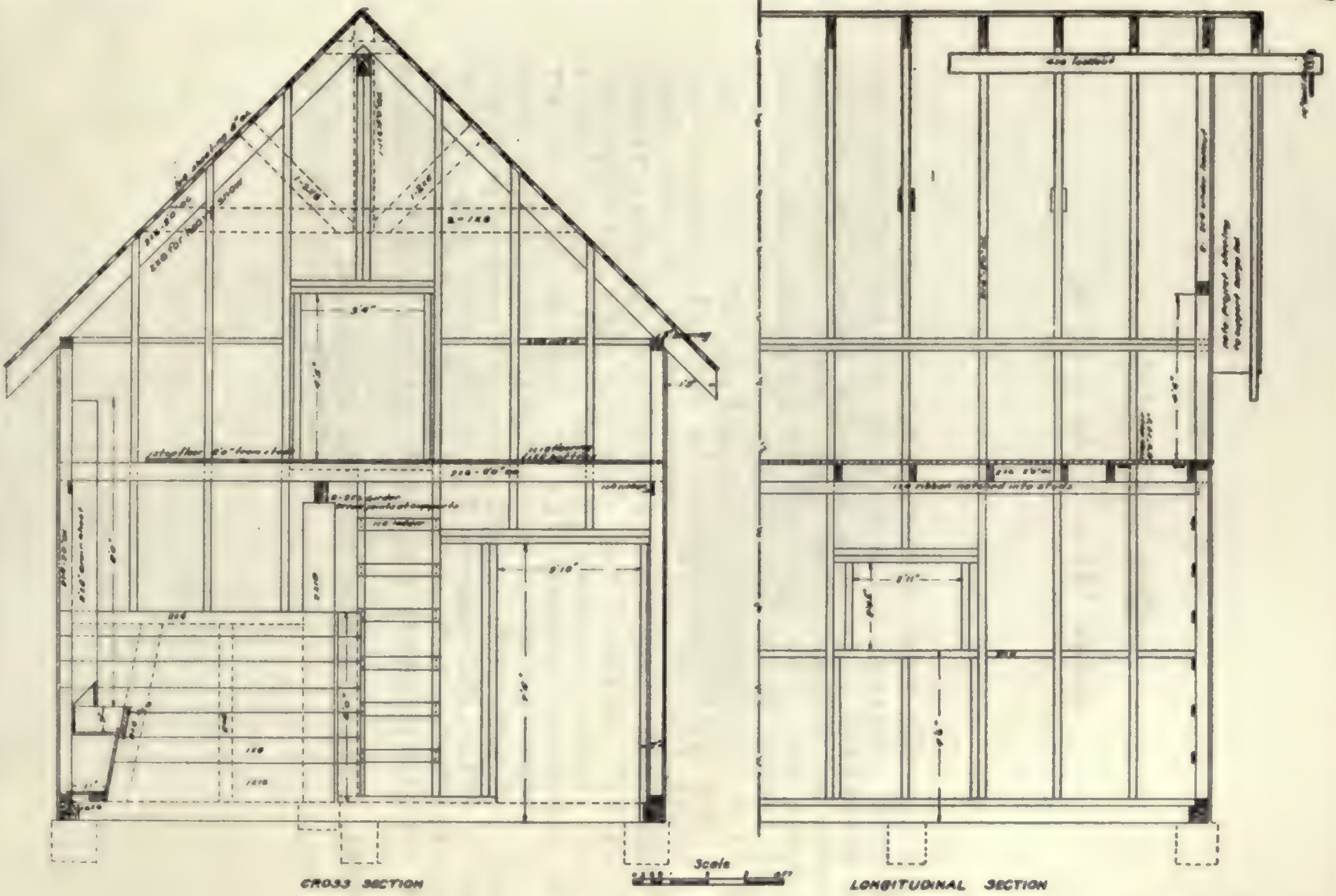
FLOOR PLAN
Scale

PLAN No. 2B
4 HORSE BARN WITH LOFT
16 0 X 16 0'
U. S. FOREST SERVICE
DISTRICT No. 6

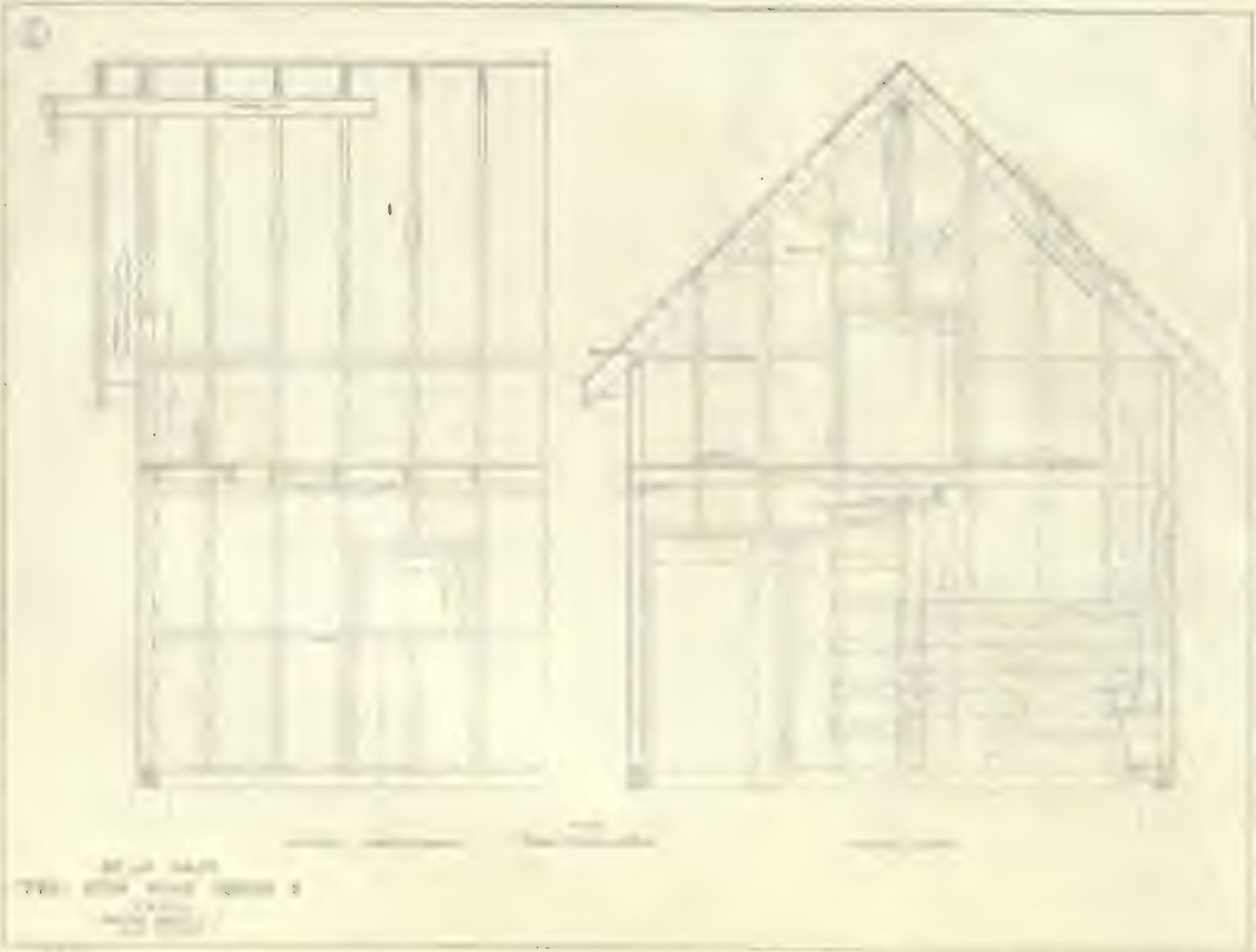


PLAN No. 2B
4 HORSE BARN WITH LOFT
16 0 X 16 0
U. S. FOREST SERVICE
DISTRICT No. 5





PLAN No. 2B
4 HORSE BARN WITH LOFT
18'0" X 18'0"
U. S. FOREST SERVICE
DISTRICT No. 6



PLAN NO. 2-B

FOUR-HORSE BARN

16'0" x 16'0" - 12' Walls

Items preceded by the mark (*) are standard and are not subject to change or choice. Elevation of the particular building site will determine the type of roof to use. All items subject to change or choice are indicated by the mark (#). To prepare a complete order list, select the items marked (#), which under the particular circumstances, will be best adapted for use at a given building site. Add such items to those marked (*). To all items of lumber, add the specifications shown under "Grade and Species" and "Finish" For example, two pieces 4" x 6" - 16' No. 1 Common, redwood, cedar, Douglas fir or pine, rough. To all items of hardware add only such descriptive matter as is necessary to adequately describe each item. For example, 2 pounds 30d. common wire nails - 3 pounds 30d. fine galvanized wire nails. Do not show on the order list the purpose for which the hardware items are to be used.

Estimated cost of construction - labor at $4.00 per day - $80.00

BUILDER'S LIST OF MATERIALS

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
	Sills.				
* 4	6 x 6 - 16	Sills	(1st choice,No2 Clear Ht.C.or (R.W.	Rough	192
			(2nd " " "D.F.,W.F. (or R.F.	"	
			(3rd " " Y.P.	"	
#	6 x 6	Underpinning	Same as above		

Note:-For item of "Underpinning" no amount is given. The actual amount needed will depend upon the slope of the ground of each particular building site. Make due allowance for this item in the lumber order. If split or round material is used, this item may be eliminated from the lumber list.

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
	Studs, Plates, Joists, etc.				
* 2	1 x 6 - 16	Ribbon	No. 1 Common, any species	Rough	16
*32	2 x 4 - 12	Studding	" " " " "	"	256
* 4	4 x 4 - 12	Corner studding	" " " " "	"	64
* 2	2 x 4 - 16	Door and window trimmers	" " " " "	"	22
* 1	4 x 6 - 8	Outrigger	" " " " "	"	18
* 6	2 x 4 - 16	Extras	" " " " "	"	64
*12	2 x 4 - 16	Plates	" " " " "	"	128
* 9	2 x 6 - 16	Joists-upper floor	(1st choice,No.2 Clear D.F. (2nd " " " " W.F. (3rd " " " " Y.P.	"	144
* 2	2 x 6 - 16	Floor girders	Same as joists	"	32

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
		Roof (up to 3500 feet elevation).			
#22	2 x 6 - 14	Rafters and barges	Same as Joists and girders	Rough	308
# 8	1 x 8 - 12	Collar beams	" " " " "	"	64
		Roof (Over 3500 feet elevation).			
#18	2 x 8 - 14	Rafters	Same as Joists and girders	Rough	336
# 4	2 x 8 - 14	Barges	" " " " "	"	75
# 8	1 x 8 - 12	Angle struts	" " " " "	"	64
# 4	1 x 8 - 16	King struts	" " " " "	"	43
		Sheeting, Floor, Walls, etc.			
*275	Bd.Ft.1 x 4	Roof sheeting	No. 2 Common, any species	Rough	275
*75	1 x12 - 14	Wall Siding	" 1 " " "	"	1050
*16	1 x12 - 16	Flooring	" " " " "	"	256
*1050	Lin.Ft.1x3	Battens	" " " " "	"	263
* 275	" " "	"	" " " " "	"	69
* 8	1 x 4 - 14	Corner boards	" " " " "	"	38
		Manger and Stalls			
* 1	2 x 10 - 12	Girder Strut	" " " " "	"	20
* 1	2 x 8 - 16	Tie rope rail	" " " " "	"	21
* 2	2 x 4 - 16	Manger frame	" " " " "	"	22
* 8	1 x 8 - 16	Partition & manger frame	" " " " "	"	86
* 4	1 x12 - 16	Manger boxing	" " " " "	"	64
* 2	1 x 6 - 16	Grain chutes	" " " " "	"	16
* 2	1 x 8 - 16	" "	" " " " "	"	22

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
	Reed Rack.				
# 2	2 x 6 - 16	Rack frame	No. 1 Common, any species	Rough	32
# 7	1 x 4 - 16	" slats	" " " " "	"	38
	Finish.				
* 4	1 x 2 - 14	Barge board trim	" " " " "	"	10
* 4	1 x 6 - 14	Gable end frieze	" " " " "	"	28
# 2	1 x 6 - 16	Rafter end frieze (Above item for use with 6" rafters)	" " " " "	"	16
# 2	1 x 8 - 16	Rafter end frieze (above item for use with 8" rafters)	No. 1 Common, any species	"	22
* 4	1 x 6 - 16	Door cleats	No. 1 Common, any species	"	32
* 1	2 x 8 - 4	Window sill	" " " " "	"	6
* 1	1 x12 - 12	" jambs & casings	" " " " "	"	12
	Roof Cover.				
#3750		Shingles, 4½" to weather	Star A Star, Red cedar		
# 2	1 x 8 - 12	Ridge boards	No. 1 Common, any species	"	18
	Or				
	If shakes are to be used, see "Shake Table" for amount of materials				
	Or				
#40	7'0"	Corrugated roofing, 26 gauge			
#125	Bd.Ft.1x8	Sheeting	No. 1 Common, any species	"	125
#18	Lin.Ft.	Plain Galvanized Roof Capping, 26 gauge.			
	Grain Box.				
* 3	2 x 4 - 16	Frame	No. 1 Common, any species	"	32
*14	1 x 8 - 16	Covering, shiplap	"C"Grade California, any species, or No.3 Clear Oregon D.F.		150

(See detail of standard grain box)

Hardware List.

#21 lbs.	No. 8	Lead Washers.
# 5 "	2"No. 9	Galvanized barbed roofing nails for Galvanized iron.
*12 "	3d.	Fine galvanized shingle nails
*15 "	8d.	Common nails
*125 "	10d.	" "
*20 "	20d.	" "
* 5 "	30d.	" "
* 2 pr.		Strap hinges 10" with screws, lower door.
* 1 "		" " 6" haymow door.
* 2		8" hasps and staples
* 1	1 x 8	Hook for pulley
* 2	6"	Hooks and staples
* 2 pr.		3" light strap hinges with screws for grain bin.
* 1 "		6" strap hinges for trap door.

Mill Order List.

* 1	4 light 10 x 14 sash.

Paint.

* 6 Gals.	Outside body paint.
* 1 "	Outside White for trim
* 2½ "	Standard roof paint.
# 1½ "	Linseed Oil
#1/4 "	Turpentine

Note:- If Laird and Sinclair paint is used, omit the Linseed Oil and Turpentine, and add

2 Gals. Aroturps.

PLAN NO. 2-B

SPECIFICATIONS

FOR

FOUR-HORSE BARN

16'0" x 16'0" - 12' Walls.

These specifications are intended to embrace all material necessary in the erection and completion of the building in all its parts, and to furnish such instructions as appear necessary to give the builder a general idea of the plan. Variations due to different locations and accessibility of lumber markets have been considered and estimates prepared accordingly.

The general plan as regards construction of frame and other vital parts of the structures is to be followed unless permission to deviate from the plans and specifications has first been secured from the District Forester. Deviations of minor consequence however, to take care of unforeseen local conditions and circumstances, may be made by the builder.

EXCAVATION.

Excavation for the foundation of the building shall be carried down to solid earth. The bottom of the excavation shall be level and smooth. When necessary to grade into unlevel ground for the purpose of providing a level building site, the slopes of the excavations resulting must clear the sides of the building by at least 3 feet. If necessary, provision should be made to prevent earth caving from the embankment from contacting with the sills. If foundation posts are of wood, they, too, should be protected.

FOUNDATION.

Do not place foundation blocks or underpinning further apart than 7 feet on center. Where snow loads are excessive or the ground is not firm, place foundation blocks or underpinning on four foot center, under all outside sills; on six foot centers under all exterior sills and girts. Where underpinning on short centers are necessary, add sufficient material to the lumber order list to provide for them.

Foundations should be either of -

(a). 6" x 6" heart cedar, redwood or Douglas fir underpinning, set upon substantial flat stones of sufficient thickness to project at least 4" above the ground. Wood blocks should never be used for footings under foundation posts.

(b). If substantial stones are not available, a masonry footing should be provided. For masonry use only hard stones, preferably flat ones. All should be carefully imbedded on their broadest faces in mortar of 1 part cement and 2 parts coarse, clean, sharp sand. Each layer should be well filled and flushed up on both sides and firmly bonded together. The tops should be made level to receive the underpinning. See Table No. C-4.

(c). Large stones of sufficient thickness to raise the sill to a height of at least 12 inches above the ground.

(d). Blocks of masonry or concrete at least 12" high, 10" wide on top and 16" square at the bottom. The top of concrete and masonry blocks should be made level to receive the sills. See Concrete Section and Table No. C-4.

MATERIALS.

All structural materials should conform as closely as possible to the specifications given in the builder's list and lumber order list. That minor deviations must sometimes be made is recognized as unavoidable.

SILLS.

Should preferably of of cedar or redwood. Douglas fir may be used as a second choice.

Rectangular sills should be laid with the narrow face up.

Sills at corner should be halved together. When two or more pieces are necessary to form the total length of sill, a splice should be made on the foundation supports, as indicated on the plan (see Cut No.B.M.-9)

Two or more joints should not occur on the same line of foundation posts. Arrange to have the splices made over foundation posts of different sets.

FLOOR JOISTS, STUDDING, BRIDGING, ETC.

Floor joists should be of selected sticks, straight grain and free from all knots larger than 1" in diameter; 1st choice being Douglas fir, 2nd choice white fir, 3rd choice yellow pine. Studding, headers, trimmers, plates, etc., may be of any straight grain material free from loose knots and knots which materially weaken the stick. Lay floor joists directly upon the sills. Where two joists form the span, use the lap joint; in all cases place the bow of the joists up. Place solid 2" x 6" bridging at the ends of each joist.

Corner studs should be 4" x 4". The plan indicates methods of placing studs.

Headers over window openings and door openings should be double.

Girts of 2" x 4" scantling should be placed horizontally in all outside walls midway between the top and bottom plates.

Place upper floor joists on a 1" x 6" ribbon set into the studs at the elevation shown in the plan. The outside of the ribbon should be flush with the edge of the studs. Spike the joists to the studs with

3 -20d. wire nails.

ROOF.

Materials for roofs of different pitches are provided in the list. Use within the respective ranges of elevations the roofs of stated pitches.

Exception to the above should occur only where snowfall is not a source of hazard as on the southern Forests and on the Modoc.

Roof trusses should be well nailed with 10d. nails in 1" members and 20d. nails in 2" members. Do not over-nail. Five nails in surface 6" x 6" are enough.

Rafters and other members of the roof frame should be of selected straight grain lumber; 1st choice Douglas fir, 2nd choice White fir, 3rd choice Yellow pine, free from knots and other imperfections. Too much attention cannot be given to the selection of the best sticks of the lumber order for rafters.

Care should be taken to cut the rafters true in order that they rest firmly on the plate, and meet squarely at the apex of the roof.

Roof projections should be sheeted solid with 1" x 12" rough or dressed lumber.

Rafter ends should be finished in the manner illustrated by the diagram "Section".

Use for roof covering either -

(a). Star A. Star red cedar or redwood shingles.
(b). Shakes of White fir or Sugar pine.
(c). Galvanized iron (See B.M. Page 8).

Lay shingles 4½" to weather on sheeting 8" on center. Nail them with 3d. fine galvanized shingle nails. Lay the bottom course of shingles double and project it 1½" beyond the sheeting. Allow a 1" projection of shingles over the barge board trim. Table No. B.M.-2 gives data on shakes. If shakes are used, allow 1½" projection at eaves and 1" projection over barge board trim.

The ridge of the roof should be finished with 1" x 6", excepting in cases where galvanized iron roofing is used. With it, use galvanized ridge capping.

SIDING.

Use 1" x 12" boards and 1" x 3" battens, free from loose knots and all knots of a greater diameter than 1½". Boards should also be free from weather check, rot, disfigurements and large pitch pockets. Finish the corners with 1" x 4" boards.

FLOORS.

No floor is provided for stall section. Flooring of the second story shall be of 1" x 12" boards, free from loose knots with 1" x 3" battens under cracks. Strips 1" thick and 2" wide shall be placed on the floor joists between the battens.

STALLS, PARTITIONS, ETC.

Place all stalls, feed boxes, partitions, etc., as shown in the drawing.

Racks for holding hay may be used if desired. Where loose hay is to be fed, racks are especially advantageous.

If a grain box is needed, follow the plan shown in Detail No. 6-E. Place it on second floor and provide feed chutes to feed boxes.

DOOR AND WINDOW FRAMES.

Make the window frames as shown in the detail drawing of them.

HARDWARE.

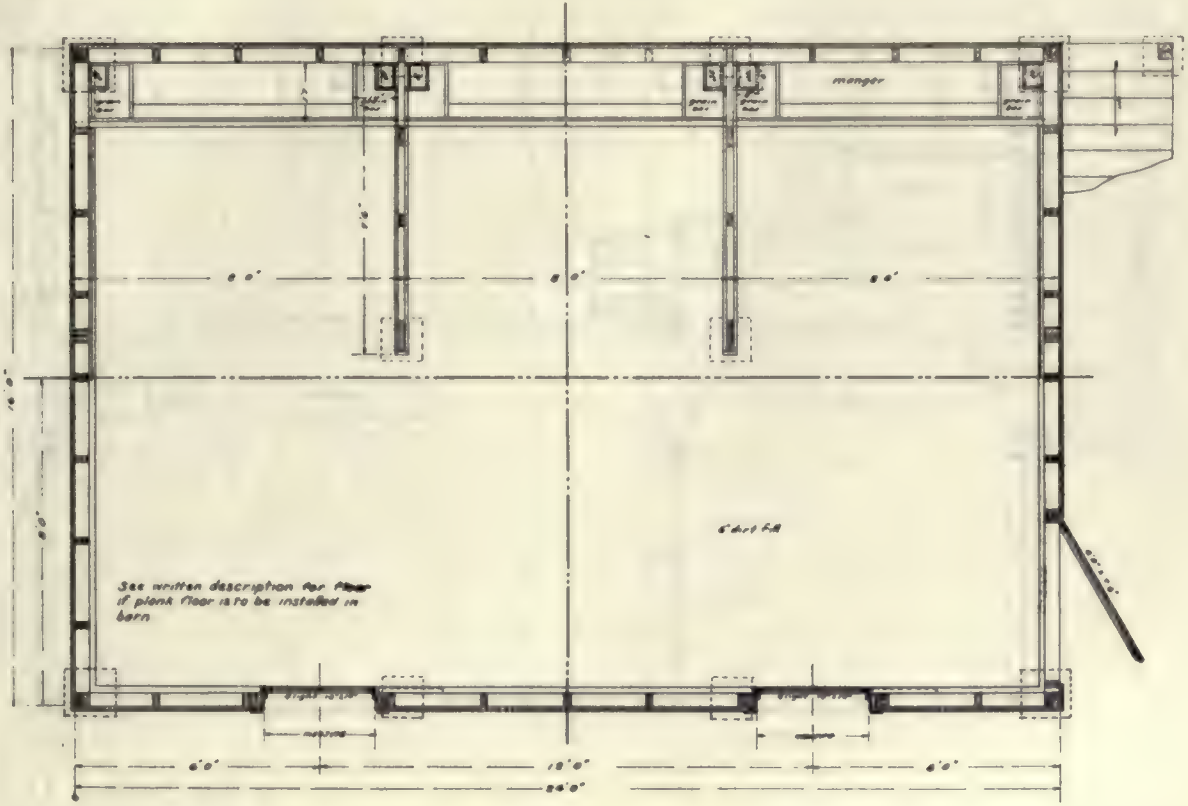
All numbers following articles of hardware are those of the Pacific Hardware and Steel Company.

PAINTING.

Color - Body - Standard gray, 2 coats
Roof - Standard green," "
Trim - Standard white,2 "

If the structural material is dry, apply the first coat as soon as the siding and roof are placed. If the lumber and roofing are not dry, apply paint as soon as the condition of the lumber will permit. Put on the second coat as soon as the first coat is dry. Do not paint if lumber is not thoroughly dry or if the surface is damp from rains, fog, frost, etc. Do not paint during damp weather. See the Paint Section of the Circular.

(1/8)

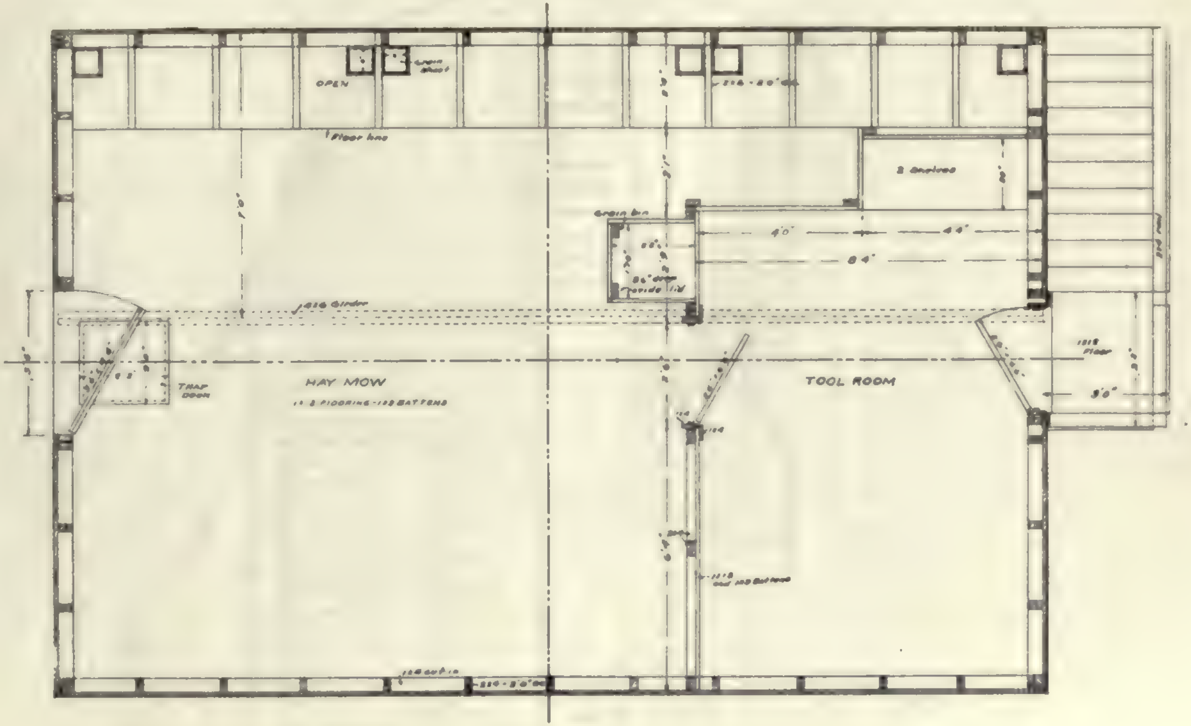


See written description for floor if plank floor is to be installed in barn

GROUND PLAN
Scale

PLAN No. 20
6 HORSE BARN & STORE ROOM
16'0" X 24'0"
MANSARD OR 1 2 PITCH ROOF
U. S. FOREST SERVICE
DISTRICT No. 6

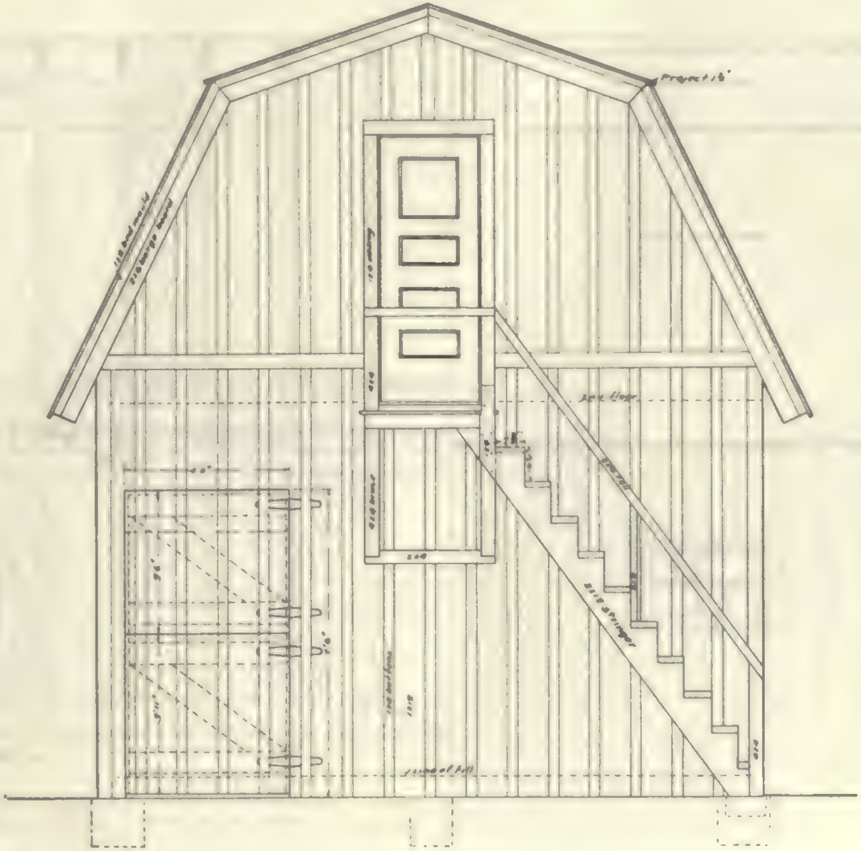
2/8



SECOND FLOOR PLAN

scale

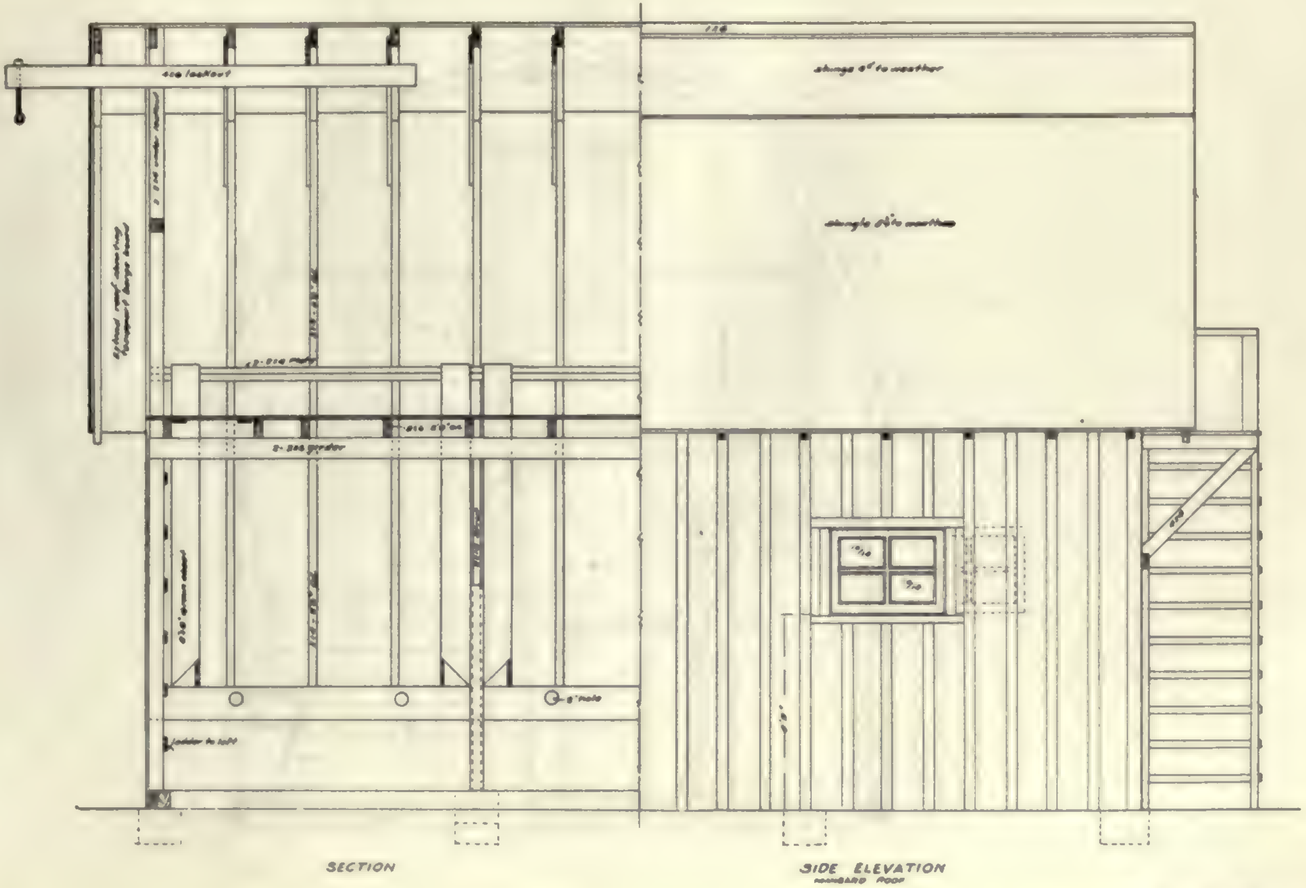
PLAN No. 20
6 HORSE BARN & STORE ROOM
16'0"X24'0"
MANSARD OR 1:2 PITCH ROOF
U. S. FOREST SERVICE
DISTRICT No. 5



END ELEVATION
scale ¼"=1'0"

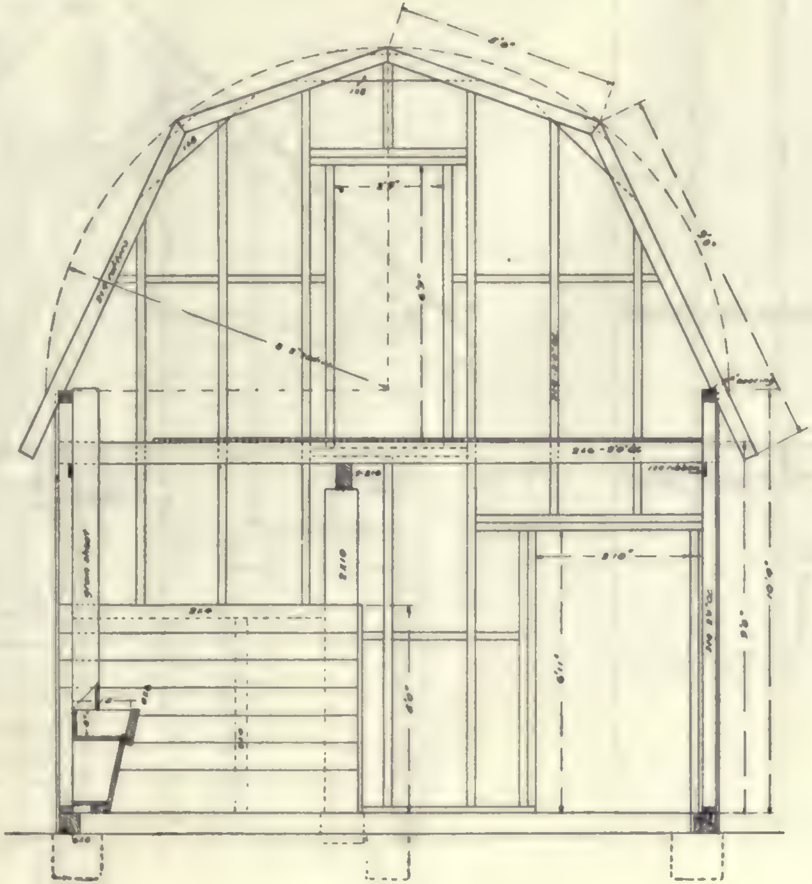
PLAN No. 2C
6 HORSE BARN & STORE ROOM

16'0" X 24'0"
MANSARD OR 1/2 PITCH ROOF
U. S. FOREST SERVICE
DISTRICT No. 5



PLAN No. 2C
6 HORSE BARN & STORE ROOM
16'0"X24'0"
MANSARD OR 1 2 PITCH ROOF
U. S. FOREST SERVICE
DISTRICT No. 6

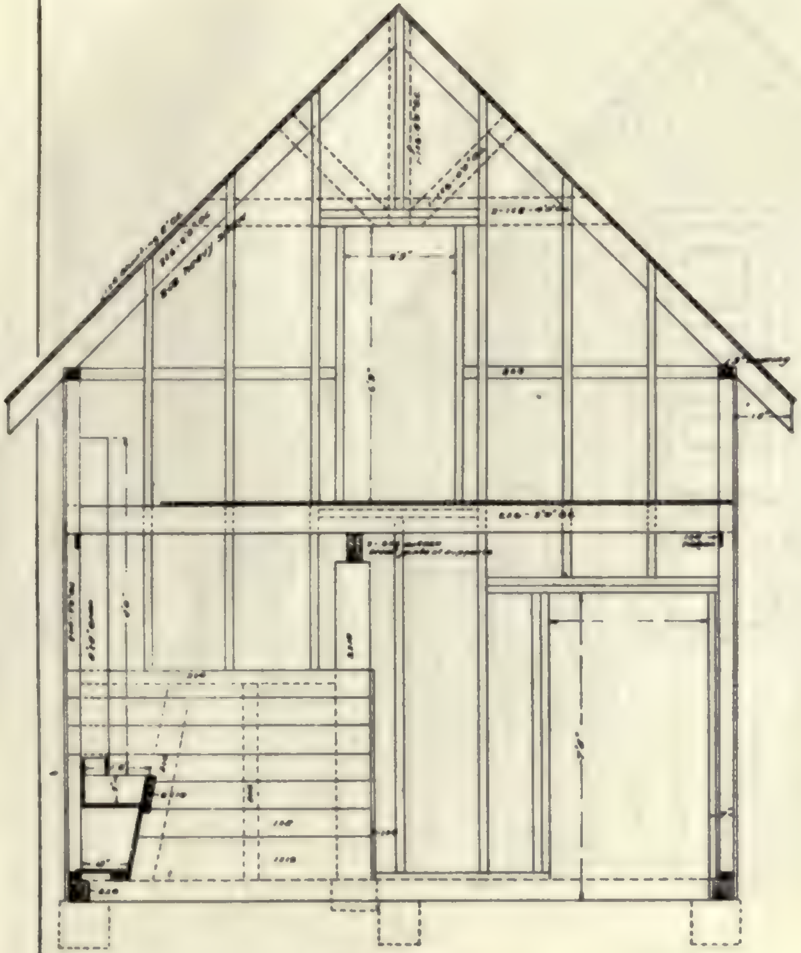
5/8



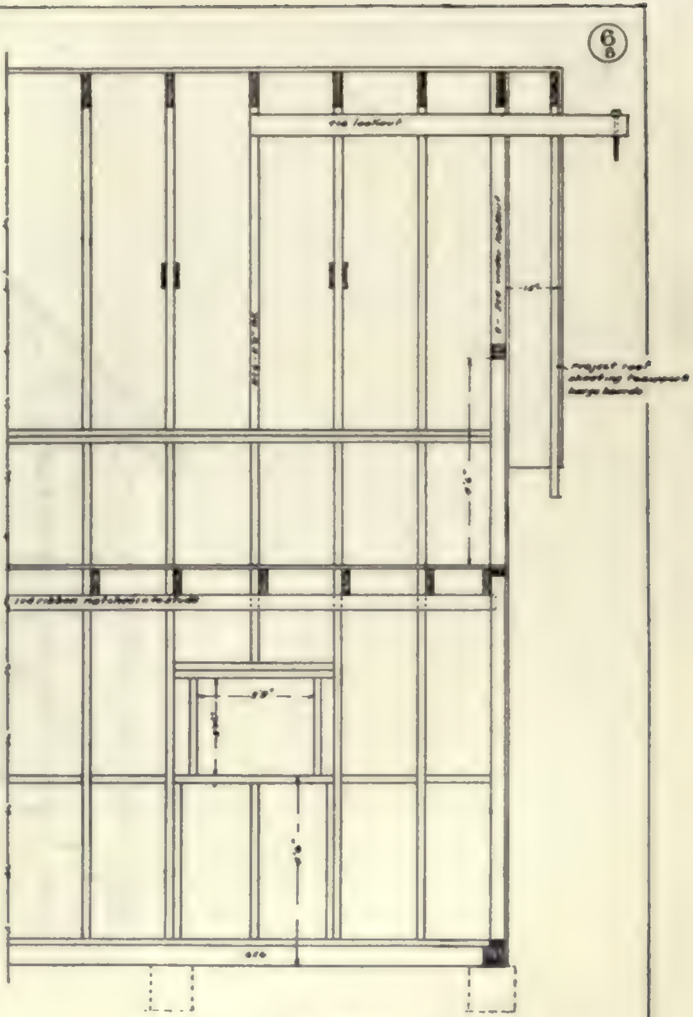
CROSS SECTION
scale 1/4"=1'0"

PLAN No. 20
6 HORSE BARN & STORE ROOM

16'0"X24'0"
MANSARD OR 1 2 PITCH ROOF
U. S. FOREST SERVICE
DISTRICT No. 6

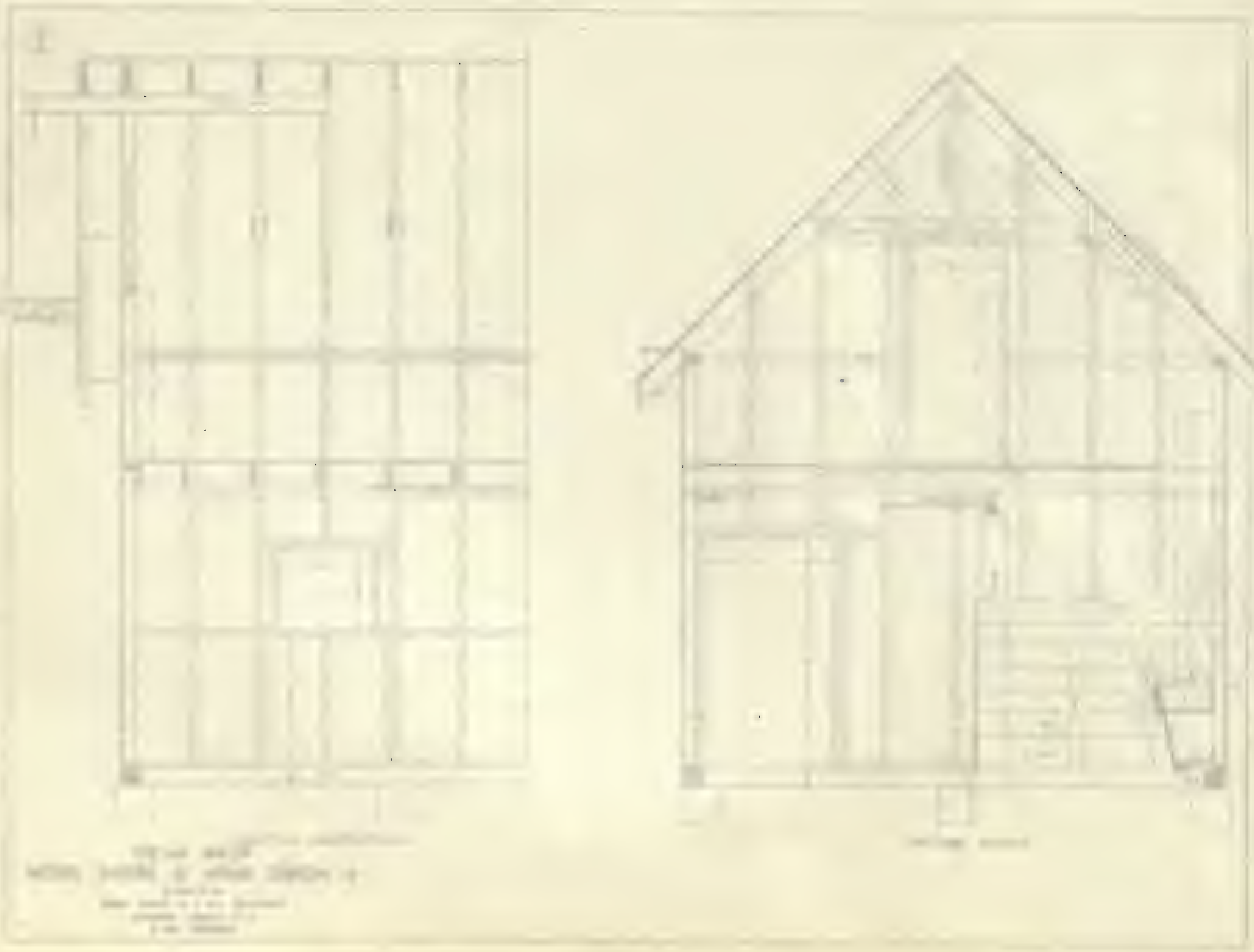


CROSS SECTION

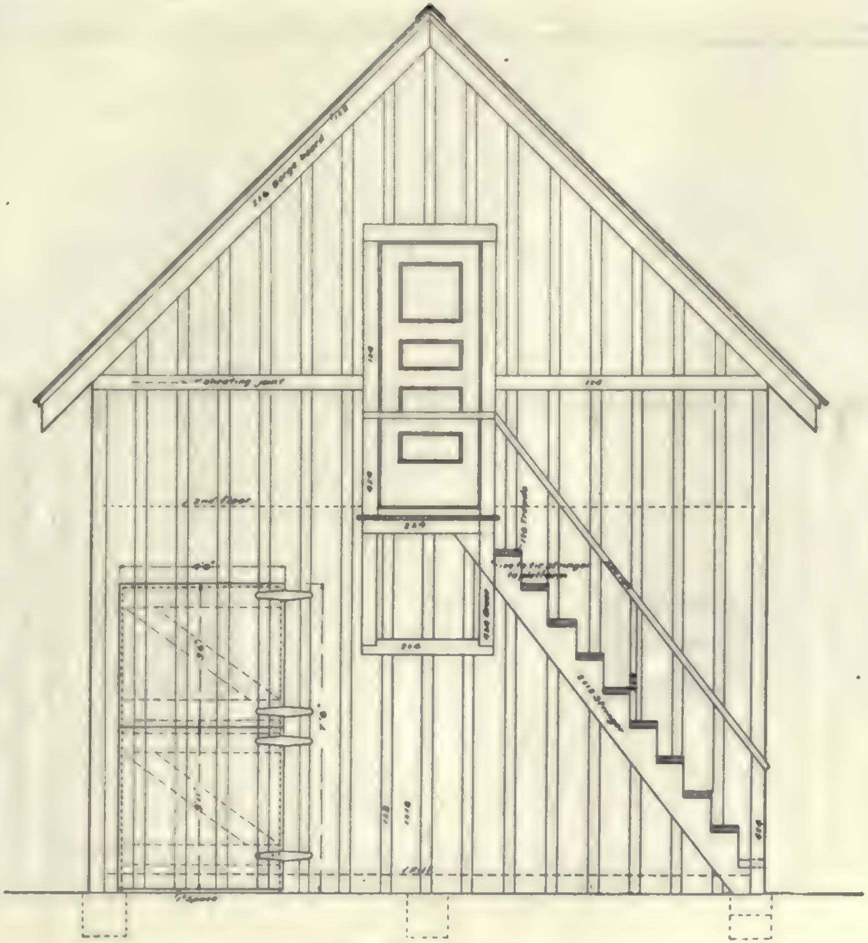


LONGITUDINAL SECTION

PLAN No. 20
6 HORSE BARN & STORE ROOM
16'0"X24'0"
MANSARD OR 1/2 PITCH ROOF
U. S. FOREST SERVICE
DISTRICT No. 6

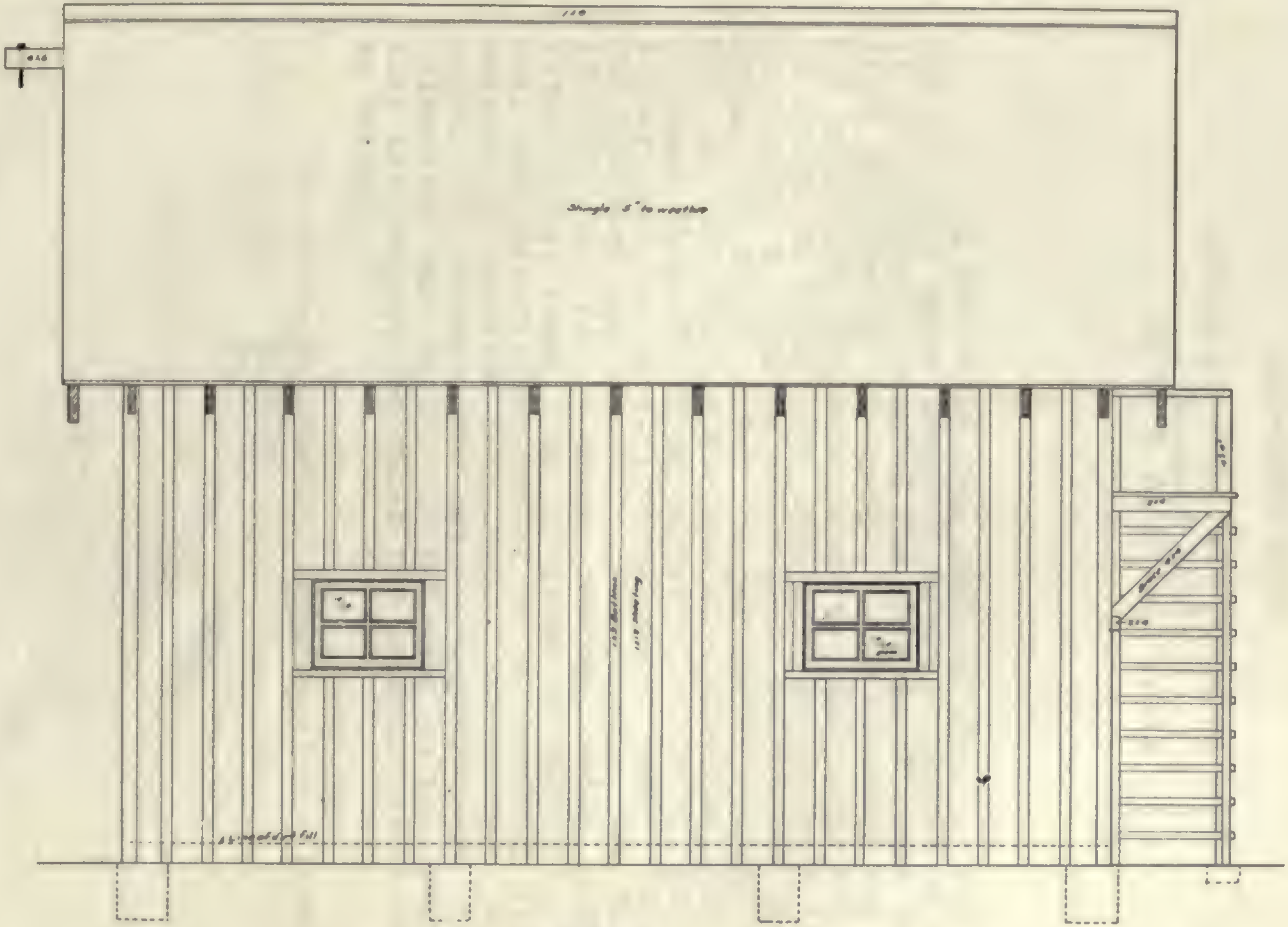


⑦
8



END ELEVATION

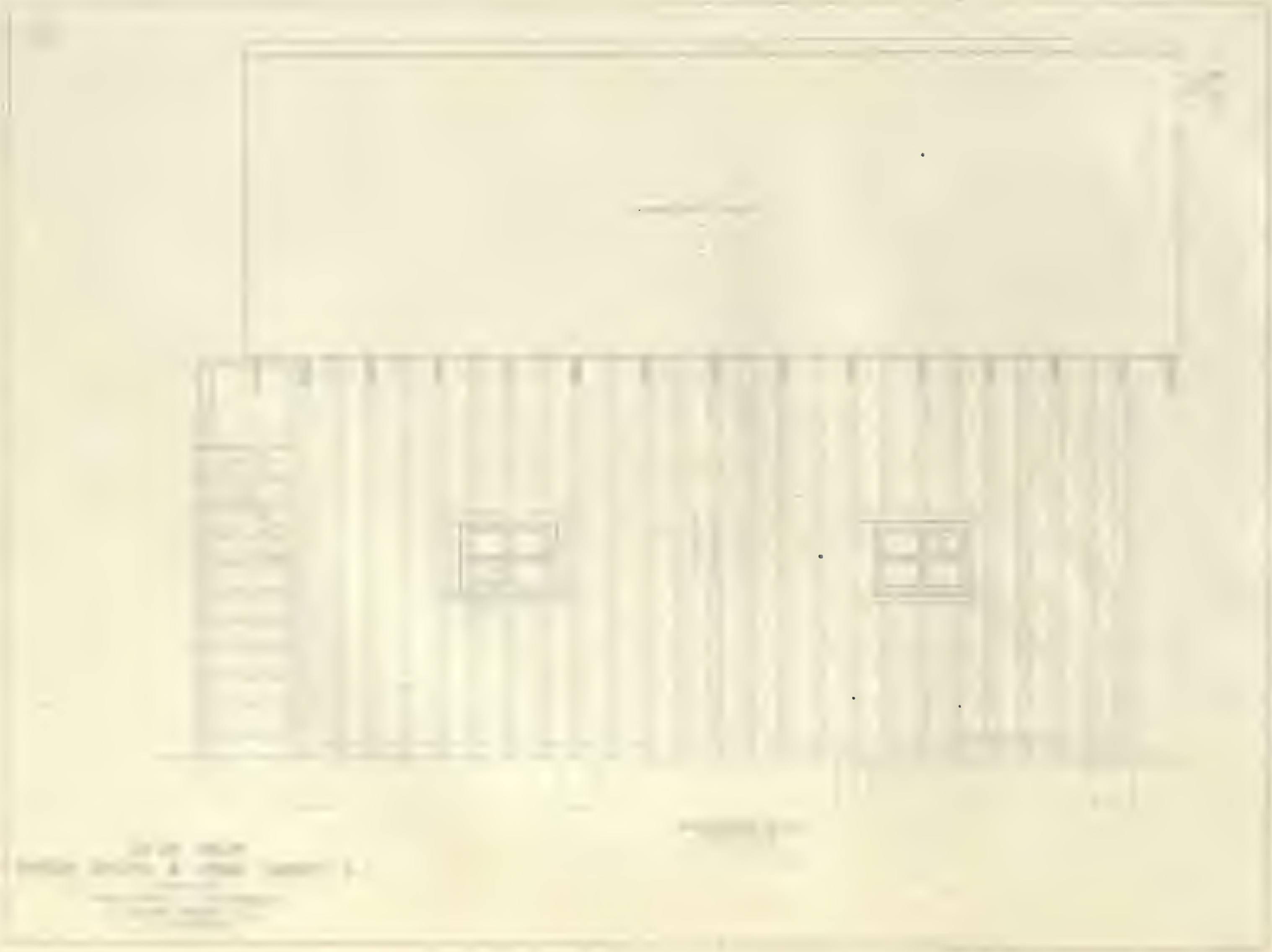
PLAN No. 20
6 HORSE BARN & STORE ROOM
16'0" X 24'0"
MANSARD OR 1:2 PITCH ROOF
U. S. FOREST SERVICE
DISTRICT No. 5



SIDE ELEVATION
½ Pitch Roof

PLAN No. 2C
6 HORSE BARN & STORE ROOM

16'0" X 24'0"
MANSARD OR 1/2 PITCH ROOF
U. S. FOREST SERVICE
DISTRICT No 5



PLAN NO.2-C

SIX-HORSE BARN

Batten Sheeting and Shingled Roof
(Mansard Roof)
16'0" x 24'0" -12'Walls

A barn with this style of roof is suitable for use only where snowfall is not a factor of hazard. It is especially adapted for storage of loose hay. Items preceded by the mark (*) are standard and are not subject to change or choice. All items subject to change or choice are indicated by the mark (#). To prepare a complete order list, select the items marked (#) which, under the particular circumstances, will be best adapted for use at a given building site. Add such items to those marked (*). To all items of lumber, add the specifications shown under "Grade and Species" and "Finish". For example, two pieces 4" x 6" - 16' No. 1 Common, redwood, cedar, Douglas fir or pine, rough. To all items of hardware, add only such descriptive matter as is necessary to adequately describe each item. For example, 2 pounds 30d. common wire nails - 3 pounds 30d. fine galvanized wire nails. Do not show on the order list the purpose for which the hardware items are to be used.

Estimated cost of construction - labor at $4.00 per day - $125.00

BUILDER'S LIST OF MATERIALS

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
		Sills.			
* 2	6 x 6 - 12	Side sills	(1st choice, No.2 Clear, Ht.C.or R.W.	Rough	72
* 2	6 x 6 - 16	End "	(2nd " " " "D.F., W.F.or	"	96
* 2	6 x 6 - 14	Side "	(3rd " " " "Y.P. /R.F.	"	84
	6 x 6	Underpinning	Same as above		

Note:- For item of "Underpinning" no amount is given. The actual amount needed will depend upon the slope of the ground of each particular building site. Make due allowance for this item in the lumber order. If split or round material is used, this item may be eliminated from the lumber list.

		Studs, Plates, Joists, and Rafters.			
* 4	1 x 6 - 16	Ribbons	No. 1 Common, any species	Rough	32
*42	2 x 4 - 10	Studding	" " " " "	"	280
* 4	4 x 4 - 12	"	" " " " "	"	64
* 5	2 x 4 - 14	"	" " " " "	"	47
* 8	2 x 4 - 16	Door and Window trimmers	" " " " "	"	86
* 7	2 x 4 - 16	Girts	" " " " "	"	74
*16	2 x 4 - 16	Plates and extras	" " " " "	"	178
*17	2 x 6 - 16	Joists	(No. 2 Clear D.F., 1st choice (" " " W.F., 2nd " (" " " Y.P. 3rd "	"	272
#26	2 x 4 - 16	Rafters & barge boards (For use at elevations below 2000 feet)	Same as above	"	278
#26	2 x 6 - 16	Rafters & barge boards (For use at elevations between 2000 and 3500 feet)	Same as above	"	416
*11	1 x 8 - 12	Rafter truss members	Same as above	"	88
* 1	4 x 6 - 8	Pulley lookout	No. 1 Common, any species	"	16
* 6	2 x 6 - 16	Floor girders (2nd floor) and extras	Same as Joists	"	48

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
		Sheeting, Floor, Wall, etc.			
*375	Bd.Ft.1x4	Sheeting(roof)8" O.C.	No. 2 Common, any speeies	Rough	375
*80	1 x12 - 12	Wall sheeting	" 1 " " "	"	960
*12	1 x12 - 16	Gable end sheeting	" " " " "	"	192
*1100	Lin.Ft.1x3	Battens	" " " " "	"	275
#14	1 x12 - 16	Partition and extras	" " " " "	"	224
#160	Lin.Ft. 1x3	Battens (partition)	" " " " "	"	40
		(Omit the above two items if tool room is not desired)			
# 7	2 x 4 - 16	Partition	No. 1 Common, any species	"	75
*32	1 x12 - 12	Flooring, even foot lengths	" " " " "	"	376
* 8	1 x 4 - 12	Corner boards	" " " " "	"	32
*200	Lin.Ft. 1x3	Battens(upper floor)	" " " " "	"	50
		Manger and Stall			
* 3	2 x10 - 8	Girder struts	" " " " "	"	40
* 1	2 x10 - 16	Tie rope rail	" " " " "	"	27
* 1	2 x10 - 8	" " "	" " " " "	"	14
* 4	2 x 4 - 16	Partition and manger frame	" " " " "	"	43
*21	1 x 8 - 14	Partition covering	" " " " "	"	196
* 3	1 x12 - 16	Manger boxing	" " " " "	"	48
* 5	1 x 6 - 16	" "	" " " " "	"	40
* 2	1 x12 - 12	" "	" " " " "	"	24
* 2	1 x 6 - 12	" "	" " " " "	"	12
		Feed Rack			
# 3	2 x 6 - 16	Rack frame	" " " " "	"	48
#11	1 x 4 - 16	" slats	" " " " "	"	5[illegible]

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bl.F.
		Outside Steps and Platform. (See specifications)			
# 1	2 x 4 - 16	Platform frame	No. 1 Common, any species	Rough	11
# 1	4 x 4 - 16	Braces and rail posts	" " " " "	"	22
# 1	1 x12 - 16	Flooring	" " " " "	"	16
# 2	2 x 4 - 12	Hand rail	" " " " "	"	16
# 2	2 x12 - 12	Stringers	" " " " "	"	48
# 2	2 x 8 - 16	Steps	" " " " "	"	43
		Finish.			
* 2	1 x 6 - 16	Door jambs	No. 1 Common, any species	S1S	16
* 3	1 x 4 - 16	" casings	" " " " "	"	16
* 1	2 x 8 - 4	" sill	" " " " "	"	6
* 4	1 x 2 - 16	Barge bd.bed mould	" " " " "	"	11
* 1	1 x 6 - 16	Window jambs	" " " " "	"	8
* 1	1 x 4 - 18	Window casings	" " " " "	"	6
* 1	2 x 8 - 8	Window sills	" " " " "	"	11
* 6	1 x 6 - 14	Grain chutes	" " " " "	Rough	42
* 6	1 x 8 - 14	" "	" " " " "	"	56
* 2	1 x12 - 16	" bin	" " " " "	"	32
* 2	½ x 2 - 16	Door stops	" " " " "	"	6
		Roof Covering.			
#6250		Shingles, 4½" to weather	Star A Star, Red cedar		

Note:- If shake roof is to be used, see Shake Table for amounts of materials required.

Hardware Order.

#26	lbs.	3d.	Fine galvanized shingle nails.
*20	"	8d.	Common Nails.
*150	"	10d.	" "
*30	"	20d.	" "
* 5	"	30d.	" "
* 2	pr.	10"	Strap hinges and screws (HEAVY) lower double door
* 1	"	6"	" " " " " haymow window.
* 2	"	3½ x 3½	Steel butts (loose pin) doors
* 2		8"	Hasps and staples, #60 Pacific Hdws.Co.
* 2			Rim locks #4468 with #9241 knobs -Pacific Hdw. Co.
* 1		1"x8"	Hook for pulley (made from 1x10 bolt)
* 2		6"	Hooks and staples
* 1	pr.		Light strap hinges.
* 1			Forest Service rim lock

Mill Order List.

* 1	2'8" x 6'8" Glass panel door
* 2	Four light 10 x 14 sash

Paint.

* 8	Gal.	Outside standard body paint
* 1	"	" white for trim
* 6	"	Standard roof paint
# 2	"	Linseed Oil (for use with oil paint--not for use with Laird and Sinclair paints)
# ½	"	Turpentine (for use with oil paint--not for use with Laird and Sinclair paints.)
# 2	"	Aroturps (for use with Laird and Sinclair paint.

PLAN NO. 2 - C

SPECIFICATIONS

FOR

SIX HORSE BARN

Batten Sheeting and Shingled Roof
(Mansard Roof)
16'0" x 24'0" - 12' Walls

These specifications are intended to embrace all material necessary in the erection and completion of the building in all its parts, and to furnish such instructions as appear necessary to give the builder a general idea of the plan. Variations due to different locations and accessibility of lumber markets have been considered and estimates prepared.

The general plan as regards construction of frame and other vital parts of the structures is to be followed unless permission to deviate from the plans and specifications has been first secured from the District Forester. Deviations of minor consequence, however, to take care of unforeseen local conditions and circumstances may be made by the builder.

EXCAVATION.

Excavation for the foundation of the building shall be carried down to solid earth. The bottom of the excavation shall be level and smooth. When necessary to grade into unlevel ground for the purpose of providing a level building site, the slopes of the excavations resulting must clear the sides of the building by at least 3 feet. If necessary, provision should be made to prevent earth caving from the embankment from contacting with the sills. If foundation posts are of wood, they too should be protected.

FOUNDATION.

Do not place foundation blocks or underpinning-further apart than 7 feet on center. Where the ground is not firm, place foundation blocks or underpinning on 4 foot center under all outside sills, on 6 foot centers under all exterior sills and girts. Where underpinning on short centers are necessary, add sufficient material to the lumber order list to provide for them.

Foundations should be either of -

(a).-6" x 6" heart cedar, redwood or Douglas fir underpinning, set upon substantial flat stones of sufficient thickness to project at least 4 inches above the ground. Wood blocks should never be used for footings under foundation posts.

(b). If substantial stones are not available, a masonry footing should be provided. For masonry use only hard stones, preferably flat ones. All should be carefully imbedded on their broadest faces in mortar of 1 part cement and 2 parts coarse, clean, sharp sand. Each layer should be well filled and flushed up on both sides and firmly bonded together. The tops should be made level to receive the underpinning. See Table No. C-4.

(c). Large stones of sufficient thickness to raise the sill to a height of at least 12 inches above the ground.

(d). Blocks of masonry or concrete at least 12 inches high, 10 inches wide on top and 16 inches square at the bottom. The top of concrete and masonry blocks should be made level to receive the sills. See Concrete Section and Table No. C-4.

MATERIALS.

All structural materials should conform as closely as possible to the specifications given in the builder's list and lumber order list. That minor deviations must sometimes be made is recognized as unavoidable.

SILLS.

Should preferably be of cedar or redwood. Douglas fir may be used as a second choice.

Rectangular sills should be laid with the narrow face up.

Sills at corner should be halved together. When two or more pieces are necessary to form the total length of sill, a splice should be made on the foundation supports, as indicated on the plan (See Cut No.B.M.-9).

Two or more joints should not occur on the same line of foundation posts. Arrange to have the splices made over foundation posts of different sets.

FLOOR JOISTS, STUDDING, BRIDGING, ETC.

Floor joists should be of selected sticks, straight grain and free from all knots larger than 1" in diameter; 1st choice being Douglas fir, 2nd choice white fir, 3rd choice yellow pine. Studding, headers, trimmers, plates, etc., may be of any straight grain material free from loose knots and knots which materially weaken the stick. Lay floor joists directly upon the sills. Where two joists form the span, use the lap joint; in all cases, place the bow of the joists up. Place solid 2" x 6" bridging at the ends of each joist.

Corner studs should be 4" x 4". The plan indicates methods of placing studs.

Headers over window openings and door openings should be double. If shingle siding is used, use double trimmers also.

Girts of 2" x 4" scantling should be placed horizontally in all outside walls midway between the top and bottom plates.

Place upper floor joist on a 1" x 6" ribbon set into the studs at the elevation shown in the plan. The outside of the ribbon should be flush with the edge of the studs. Spike the joists to the studs with 3-20d. wire nails.

ROOF.

Materials for roofs at various elevations are included in the builder's list of materials. That the mansard type of roof is not adapted for regions of heavy snowfall should be borne in mind. On the average Sierra Forests the barn with the roof of the mansard type should not be erected at elevations above 3500. Exceptions should occur only where snowfall is not a source of hazard as on the Modoc, and perhaps a part of the Sequoia Forest.

Roof trusses should be well nailed with 10d. nails in 1" members, and 20d. nails in 2" members. Do not over-nail. Five nails in surface 6" x 6" are enough.

Rafters and other members of the roof frame should be of selected straight grain lumber; 1st choice Douglas fir, 2nd choice white fir, 3rd choice Yellow pine, free from knots and other imperfections. Too much attention cannot be given to the selection of the best sticks of the lumber order for rafters.

Care should be taken to cut the rafters true, in order that they will rest firmly upon the plate, and meet squarely at all angles.

Roof projections should be sheeted solid with 1" x 12" rough or dressed lumber.

Rafter ends should be finished in the manner illustrated by the diagram "Section".

Use for roof covering either -

(a). Star A Star red cedar or redwood shingles.
(b). Shakes of white fir or sugar pine.
(c). Galvanized iron (See B.M. Page 8)

Lay shingles 4½ or 5" to weather on sheeting 8" on center. Nail them with 3d. fine galvanized shingle nails. Lay the bottom course of shingles double and project it 1½" beyond the sheeting. Allow a 1" projection of shingles over the barge board trim. Table No. B.M.-2 gives data on shakes. If shakes are used, allow 1½" projection at eaves and 1" projection over barge board trim.

The ridge of the roof should be finished with 1" x 6" excepting in cases where galvanized iron roofing is used. With it, use galvanized ridge capping.

SIDING.

Use 1" x 12" boards and 1" x 3" battens, free from loose knots and all knots of a greater diameter than 1½". Boards should also be free from weather check, rot, disfigurements and large pitch pockets.

Finish the corners with 1" x 4" boards.

FLOOR.

No floor is provided for stall section. Flooring of the second story shall be of 1" x 12" board free from loose knots with 1" x 3" battens under cracks. Strips 1" thick and 2" wide shall be placed on the floor joists between the battens.

STALLS, PARTITIONS, ETC.

Place all stalls, feed boxes, partitions, etc. as shown on the drawing.

Racks for holding hay may be used if desired. Where loose hay is to be fed, racks are especially advantageous.

If a grain box is needed, follow the plan shown in Detail No. 6-E. Place it on second floor and provide feed chutes to feed boxes.

TOOL ROOM.

A tool room as shown in the plan may or may not be provided, at the discretion of the builder, Since a barn of the mansard type of roof will be used almost entirely for the storage of loose hay, it is probable that all available space will be needed for hay storage. Ordinarily, therefore, the tool room will be omitted with the mansard type of roof.

STAIRS AND PLATFORM.

If a tool or store room is desired, use the stairs as shown. If a tool or store room is not wanted, the stairs may be omitted, if the builder wishes. If omitted, the ladder will be used as a means of reaching the upper floor.

DOOR AND WINDOW FRAMES.

Make the window frames as shown in the detailed drawing of them.

HARDWARE.

All numbers following articles of hardware are those of the Pacific Hardware & Steel Company.

PAINTING.

Color - Body - Standard gray , 2 coats.
- Roof - " green, 2 "
- Trim - " white, 2 "

If the structural material is dry, apply the first coat as soon as the siding and roof are placed. If the lumber and roofing are not dry, apply paint as soon as the condition of the lumber will permit. Put on the second coat as soon as the first coat is dry. Do not paint if lumber is not thoroughly dry or if the surface is damp from rains, fog, frost, etc. Do not paint during damp weather. See the Paint Section of the Circular.

BUILDINGS

SERIES NO. 2

PLAN NO. 2-C. SIX-HORSE BARN
16'0" x 24'0" - 12' Walls
1/2 Pitch Roof

COERT DUBOIS,

District Forester.

May 1, 1917.

PLAN NO. 2-C

SIX--HORSE BARN

16' x 24' - 12' Walls
1/2 Pitch Roof

Items preceded by the mark (*) are standard and are not subject to change or choice. Elevation of the particular building site will determine the slope of roof to use and the kind of roof bracing. All items subject to change or choice are indicated by the mark (#). To prepare a complete order list, select the items marked (#) which, under the particular circumstances, will be best adapted for use at a given building site. Add such items to those marked (*). To all items of lumber add the specifications shown under "Grade and Species" and "Finish". For example, two pieces 4" x 6" - 16' No. 1 Common, redwood, cedar, Douglas fir or pine, rough. To all items of hardware add only such descriptive matter as is necessary to adequately describe each item. For example, 2 pounds 30d. common wire nails - 3 pounds 30d. fine galvanized wire nails. Do not show on the order list the purpose for which the hardware items are to be used.

Estimated cost of construction - labor at $4.00 per day - $120.00.

Builder's List of Materials

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
	Sills				
* 2	6 x 6 - 12	Side sills	(1st choice, Ht.C, or RW	Rough	72
* 2	6 x 6 - 16	End "	(2nd " D.F.,W.F. or R.F.	"	96
* 2	6 x 6 - 14	Sides	(3rd " Y.P.	"	84
	6 x 6	Underpinning - Depends upon site. Builder shall include amount needed. See specifications.			
	Studs, Plates, Joists, Etc.				
* 4	1 x 6 - 12	Ribbon	No. 1 Common, any species	"	24
*40	2 x 4 - 12	Studs	" " " "	"	320
* 4	4 x 4 - 12	"	" " " "	"	64
* 5	2 x 4 - 14	"	" " " "	"	47
* 8	2 x 4 - 16	Door & window trimmers	" " " "	"	86
*13	2 x 4 - 16	Girts and extras	" " " "	"	139
*11	2 x 4 - 16	Plates	" " " "	"	118
*13	2 x 6 - 16	Joists, hay loft floor	(No.2 Clear, D.F. 1st choice	"	208
			(" " W.F. 2nd "	"	
			(" " Y. P.3rd "	"	
* 3	2 x 6 - 16	Floor girders	Same as Joists	"	48
* 1	4 x 6 - 8	Pulley outlook	No. 1 Common, any species	"	16

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
		Roof (For elevations up to 3500 feet)			
# 4	2 x 6 - 14	Barge boards	No. 1 Common, any species	Rough	56
#26	2 x 6 - 14	Rafters	(No. 2 Clear, D.F. 1st choice	"	364
			(" " W.F. 2nd "	"	
			(" " Y.P. 3rd "	"	
#12	1 x 6 - 12	Collar beams	Same as for rafters	"	72
		Roof (For elevations over 3500 feet)			
# 4	2 x 8 - 14	Barge boards	No. 1 Common, any species	"	75
#26	2 x 8 - 14	Rafters	(No. 2 Clear, D.F. 1st choice	"	486
			(" " W.F. 2nd "	"	
			(" " Y.P. 3rd "	"	
#12	1 x 8 - 12	Collar beams	Same as for rafters	"	96
# 6	1 x 8 - 16	Angle struts	" " " "	"	64
# 6	1 x 8 - 12	King struts	" " " "	"	48
		Sheeting, Floor, Walls, Etc.			
*	1 x 4	Roof sheeting 8" O.C.	No. 2 Common, any species	"	350
*80	1 x12 - 14	Wall siding	No. 1 " " "	"	1120
*12	1 x12 - 16	Gable "	" " " "	"	192
*1252	Lin.Ft. 1 x 3	Battens	" " " "	"	313
# 9	1 x12 - 16	Partition)	" " " ")Omit if store	"	144
#160	Lin.Ft. 1 x 3	Battens (partition)	" " " ")room is not	"	40
# 7	2 x 4 - 16	Partition)	" " " ")desired	"	75
*24	1 x12 - 12	Flooring	" " " "	"	376
* 8	1 x 4 - 14	Corner boards	" " " "	"	38
*236	Lin.Ft. 1 x 3	Battens, hay loft floor	" " " "	"	59

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
		Manger and Stalls			
* 3	2 x 10 - 8	Girder struts	No. 1 Common, any species	Rough	40
* 1	2 x 8 - 8	Tie rope rail	" " " "	"	22
* 1	2 x 8 - 8	" " "	" " " "	"	11
* 4	2 x 4 - 16	Partition & manger frame	" " " "	"	43
*21	1 x 8 - 14	Partition covering	" " " "	"	196
* 3	1 x 12 - 16	Manger boxing	" " " "	"	48
* 3	1 x 6 - 16	" "	" " " "	"	24
* 4	1 x 12 - 12	" " & extras	" " " "	"	48
* 2	1 x 6 - 12	" " rough	" " " "	"	12
		Outside Steps and Platform			
		(See specifications)			
# 1	2 x 4 - 16	Platform frame	No. 1 Common, any species	"	11
# 1	4 x 4 - 16	Braces and rail posts	" " " "	"	22
# 1	1 x 12 - 16	Flooring	" " " "	"	16
# 2	2 x 4 - 12	Hand rail	" " " "	"	16
# 2	2 x 12 - 12	Stringers	" " " "	"	48
# 2	2 x 8 - 16	Steps	" " " "	"	43

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
	Finish				
* 2	1 x 6 - 16	Door jambs	No. 1 Common, any species	Rough	16
* 3	1 x 4 - 16	" casings	" " " "	"	16
* 1	2 x 8 - 4	" sill	" " " "	"	6
* 4	1 x 2 - 16	Barge board, bed trim	" " " "	"	11
* 1	1 x 6 - 16	Window jamb	" " " "	"	8
* 1	1 x 4 - 18	" casings	" " " "	"	6
* 1	2 x 8 - 8	" sills	" " " "	"	11
* 6	1 x 6 - 14	Grain chutes	" " " "	"	42
* 6	1 x 8 - 14	" "	" " " "	"	56
* 8	1 x12 - 16	" bins and extras	" " " "	"	128
* 4	1 x 6 - 14	Gable finish	" " " "	"	28
# 6000	- - -	Shingles 4½" to weather	Star A Star, red cedar		
If shakes are to be used, see "Shake Table" No. B.M.2 for materials					
		or			
#56 pcs.		7'0" Corrugated iron roofing, 26 gauge			
	1 x 6	Sheeting	No. 1 Common, any species	"	150
#27		Plain galvanized ridge capping, 26 gauge			

Hardware List

#	6#	2d.	No. 9 galvanized roofing nails for galvanized iron
#	4#		No. 8 Lead washers
#	24#	3d.	Fine galvanized shingle nails for shingles
*	25#	8d.	Common nails
*	150#	10d.	" "
*	30#	20d.	" "
*	5#	30d.	" "
	2	Pr. -	10" strap hinges and screws (heavy) lower double door
	1	" -	6" " " " " " haymow window
	2	" -	3½ x 3½ steel butts (loose pin) for tool room doors with screws
	2	- - -	Rim locks, #4468, with #9241 knobs
	2	- - -	Hasps and staples and screws. No. 60 Pacific Hardware Company
	1	- - -	1" x 8" hook for pulley (made from 1" x 12" bolt)
	2	- - -	Hooks and staples
	1	Pr. -	4" Light strap hinges and screws
	1	- - -	Forest Service rim lock

Mill Order List

*	1	- - -	2'8" x 6'8" Glass panel door
*	2	- - -	4-light 10 x 14 sash

Paint

*	8	Gal.	Outside body paint
*	1	"	" white for trim
*	6	"	Standard roof paint
#	2	"	Linseed oil for use with oil paint. Not for use with Laird & Sinclair paint
#	½	"	Turpentine " " " " " " " " " " " " "
#	2	"	Aroturps (For use with Laird & Sinclair paint).

SPECIFICATIONS

FOR

BARNS

PLAN NO. 2-C

These specifications are intended to embrace all material necessary in the erection and completion of the building in all its parts, and to furnish such instructions as appear necessary to give the builder a general idea of the plan. Variations due to different locations and accessibility of lumber markets have been considered and estimates prepared.

The general plan as regards construction of frame and other vital parts of the structures is to be followed unless permission to deviate from the plans and specifications has first been secured from the District Forester. Deviations of minor consequence, however, to take care of unforeseen local conditions and circumstances may be made by the builder.

EXCAVATION.

Excavation for the foundation of the building shall be carried down to solid earth. The bottom of the excavation shall be level and smooth. When necessary to grade into unlevel ground for the purpose of providing a level building site, the slopes of the excavations resulting must clear the sides of the building by at least 3 feet If necessary, provision should be made to prevent earth caving from the embankment from contacting with the sills. If foundation posts are of wood, they too should be protected.

FOUNDATION.

Do not place foundation blocks or underpinning further apart than 7 feet on center. Where snow loads are excessive or the ground is not firm, place foundation blocks or underpinning on 4 foot center under all outside sills, on

6 foot centers under all exterior sills and girts. Where underpinning on short centers are necessary, add sufficient material to the lumber order list to provide for them.

Foundations should be either of -

(a) 6" x 6" heart cedar, redwood or Douglas fir underpinning, set upon substantial flat stones of sufficient thickness to project at least 4 inches above the ground. Wood blocks should never be used for footings under foundation posts.

(b) If substantial stones are not available, a masonry footing should be provided. For masonry use only hard stones, preferably flat ones. All should be carefully imbedded on their broadest faces in mortar of 1 part cement and 2 parts coarse, clean, sharp sand. Each layer should be well filled and flushed up on both sides and firmly bonded together. The tops should be made level to receive the underpinning. See Table No. C-4.

(c) Large stones of sufficient thickness to raise the sill to a height of at least 12 inches above the ground.

(d) Blocks of masonry or concrete at least 12 inches high, 10 inches wide on top and 16 inches square at the bottom. The top of concrete and masonry blocks should be made level to receive the sills. See Concrete Section and Table No. C-4.

MATERIALS

All structural materials should conform as closely as possible to the specifications given in the builder's list and lumber order list. That minor deviations must sometimes be made is recognized as unavoidable.

SILLS.

Should preferably be of cedar or redwood. Douglas fir may be used as a second choice.

Rectangular sills should be laid with the narrow face up.

Sills at corner should be halved together. When two or more pieces are necessary to form the total length of sill a splice should be made on the foundation supports, as indicated on the plan (see Cut No. B.M.-9).

Two or more joints should not occur on the same line of foundation posts. Arrange to have the splices made over foundation posts of different sets.

FLOOR JOISTS, STUDDING, BRIDGING, ETC.

Floor joists should be of selected sticks, straight grain and free from all knots larger than 1 inch in diameter; 1st choice being Douglas fir, 2nd choice white fir, 3rd choice yellow pine. Studding, headers, trimmers, plates, etc., may be of any straight grain material free from loose knots and knots which materially weaken the stick. Lay floor joists directly upon the sills. Where two joists form the span, use the lap joint; in all cases place the bow of the joists up. Place solid 2" x 6" bridging at the ends of each joist.

Corner studs should be 4" x 4". The plan indicates methods of placing studs.

Headers over window openings and door openings should be double. If shingle siding is used double trimmers also.

Girts of 2" x 4" scantling should be placed horizontally in all outside walls midway between the top and bottom plates

Place upper floor joist on a 1" x 6" ribbon set into the studs at the elevation shown in the plan. The outside of the ribbon should be flush with the edge of the studs. Spike the joists to the studs with 3 - 20d. wire nails.

ROOF.

Materials for roofs of different pitches are provided in the list. Use within the respective ranges of elevations the roofs of stated pitches.

Exception to the above should occur only where snowfall is not a source of hazard as on the southern Forests and on the Modoc.

Roof trusses should be well nailed with 10d. nails in 1 inch members and 20d. nails in 2 inch members. Do not over-nail. Five nails in surface 6" x 6" are enough.

Rafters and other members of the roof frame should be of selected straight grain lumber; 1st choice Douglas fir, 2nd choice white fir, 3rd choice yellow pine, free from knots and other imperfections. Too much attention cannot be given to the selection of the best sticks of the lumber order for rafters.

Care should be taken to cut the rafters true in order that they rest firmly on the plate, meet squarely at the apex of the roof.

Roof projections should be sheeted solid with 1" x 12" rough or dressed lumber.

Rafter ends should be finished in the manner illustrated by the diagram "Section".

Use for roof covering either -

(1) Star A Star red cedar or redwood shingles

(2) Shakes of white fir or sugar pine

(3) Galvanized iron (see B.M. Page 8)

Lay shingles 4½ or 5 inches to weather on sheeting 8 inches on center. Nail them with 3d. fine galvanized shingle nails. Lay the bottom course of shingles double and project it 1½ inches beyond the sheeting. Allow a 1 inch projection of shingles over the barge board trim. Table No. B.M.-2 gives data on shakes. If shakes are used allow 1½ inches projection at eaves and 1 inch projection over barge board trim.

The ridge of the roof should be finished with 1" x 6" excepting in cases where galvanized iron roofing is used. With it, use galvanized ridge capping.

SIDING.

Use 1" x 12" boards and 1" x 3" battens, free from loose knots and all knots of a greater diameter than 1½ inch. Boards should also be free from weather check, rot, disfigurements and large pitch pockets.

Finish the corners with 1" x 4" boards.

FLOOR.

No floor is provided for stall section. Flooring of the second story shall be of 1" x 12" board free from loose knots with 1" x 3" battens under cracks. Strips 1 inch thick and 2 inches wide shall be placed on the floor joists between the battens.

STALLS, PARTITIONS, ETC.

Place all stalls, feed boxes, partitions, etc., as shown on the drawing.

Racks for holding hay may be used if desired. Where loose hay is to be fed, racks are especially advantageous.

If a grain box is needed follow the plan shown in Detail No. 6-E. Place it on second floor and provide feed chutes to feed boxes.

TOOL ROOM.

A tool room as shown on the plan may or may not be provided. If baled hay is used the entire space upstairs may not be required for hay storage. In such cases the surplus space might be utilized to good advantage for a store or tool room.

STAIRS AND PLATFORM.

If a tool or store room is desired use the stairs as shown. If a tool or store room is not wanted, the stairs may be omitted if the builder wishes. If omitted the ladder will be used as a means of reaching the upper floor. If the stairs are used where snowfall is extremely heavy the corners of the platform should be supported by a vertical support of 4" x 4" square or 6" round material. Use round poles where practicable. If not, add 1 piece 4" x 4" - 16' to the lumber order list.

DOOR AND WINDOW FRAMES.

Make the window frames as shown in the detail drawing of them.

HARDWARE.

All numbers following articles of hardware are those of the Pacific Hardware & Steel Company.

PAINTING.

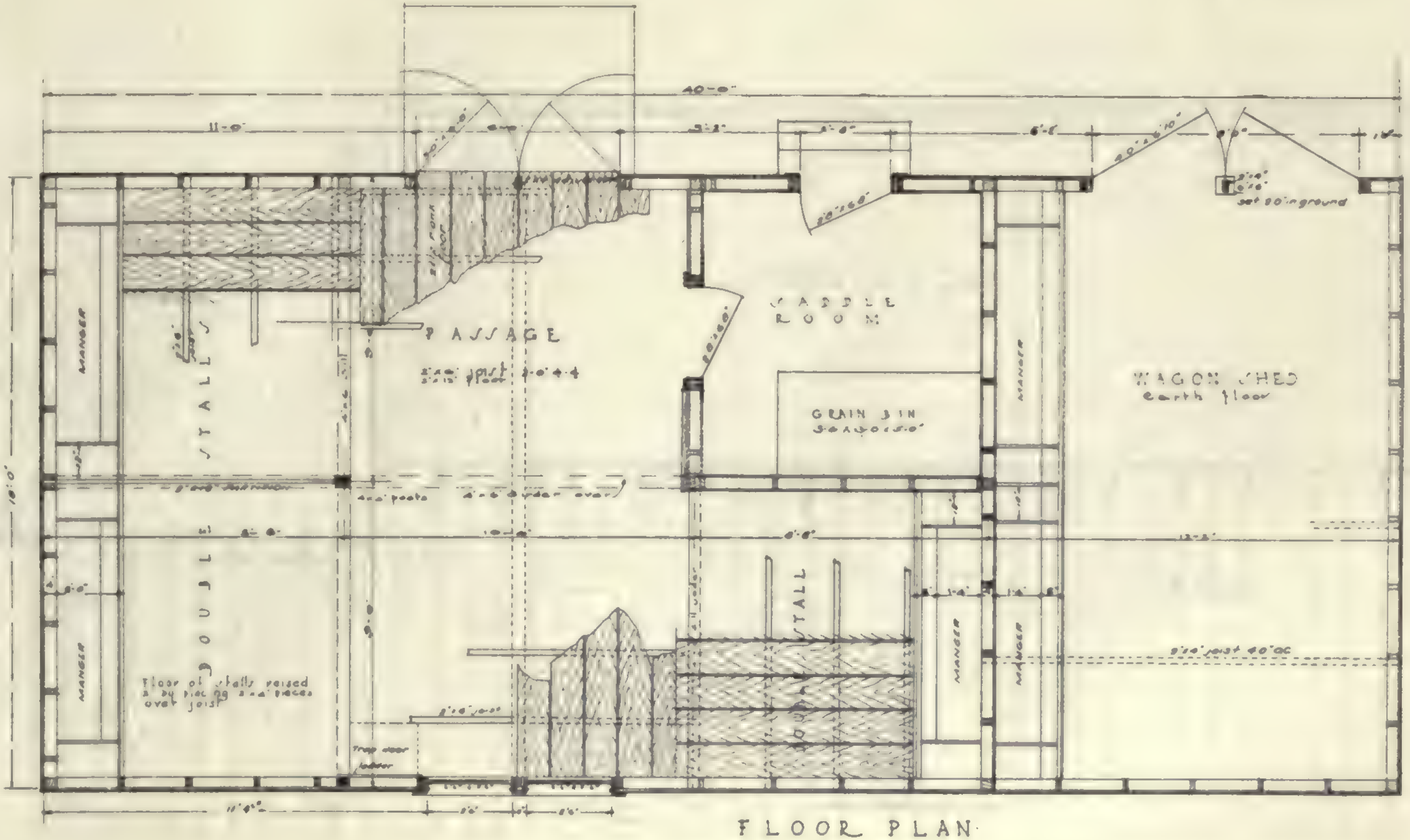
Color - Body - Standard gray, 2 coats
Roof - " green, 2 "
Trim - " white, 2 "

If the structural material is dry apply the first coat as soon as the siding and roof are placed. If the lumber and roofing are not dry, apply paint as soon as the condition of the lumber will permit. Put on the second coat as soon as the first coat is dry. Do not paint if lumber is not thoroughly dry or if the surface is damp from rains, fog, frost, etc. Do not paint during damp weather. See the Paint Section of the Circular.

PLAN NO 2D
BARN & WAGON SHED

SCALE

①¼



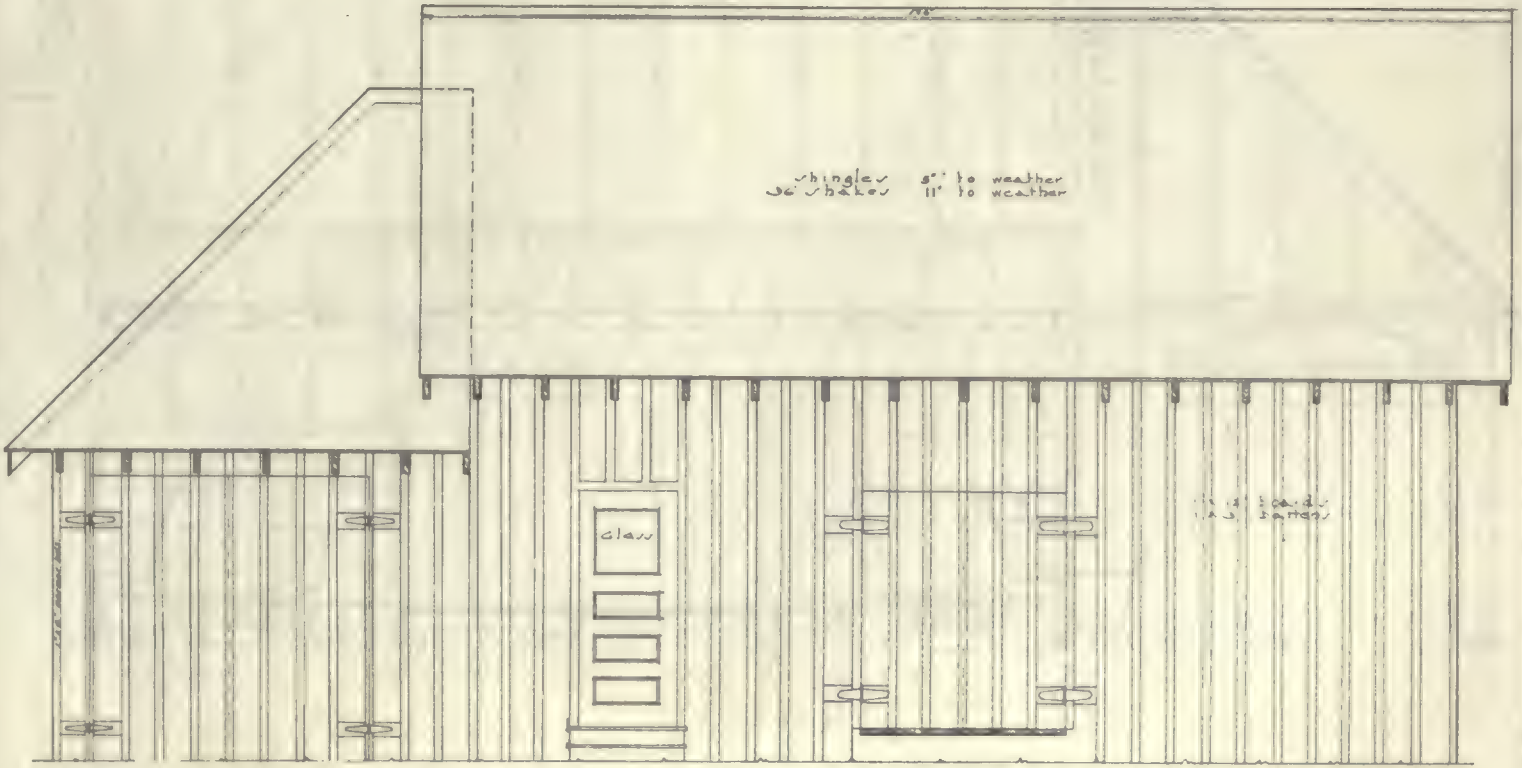
FLOOR PLAN

JJR 3-29-16

PLAN NO 2D
BARN & WAGON SHED

SCALE

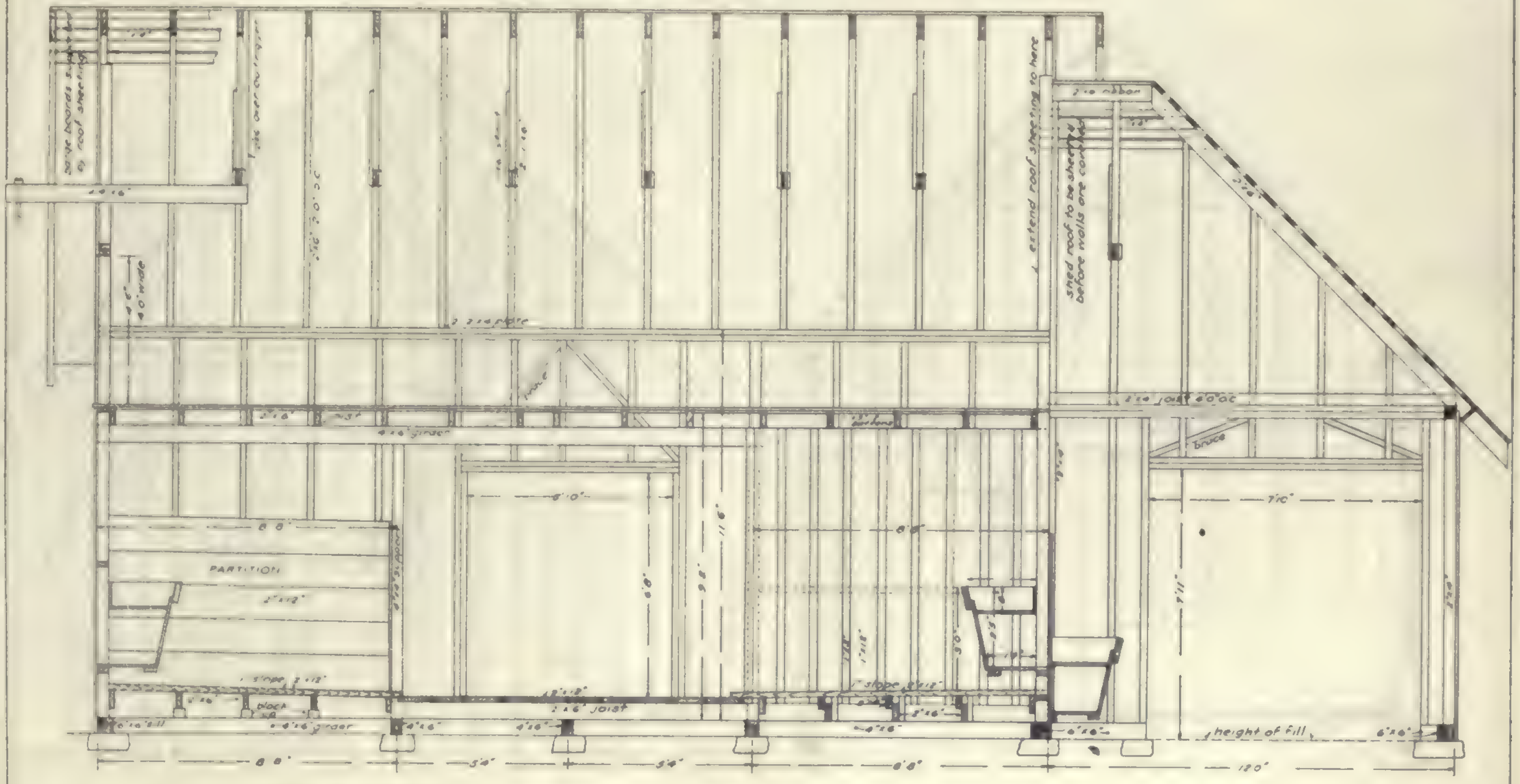
②
1



SIDE ELEVATION.

JJR 3-29-16

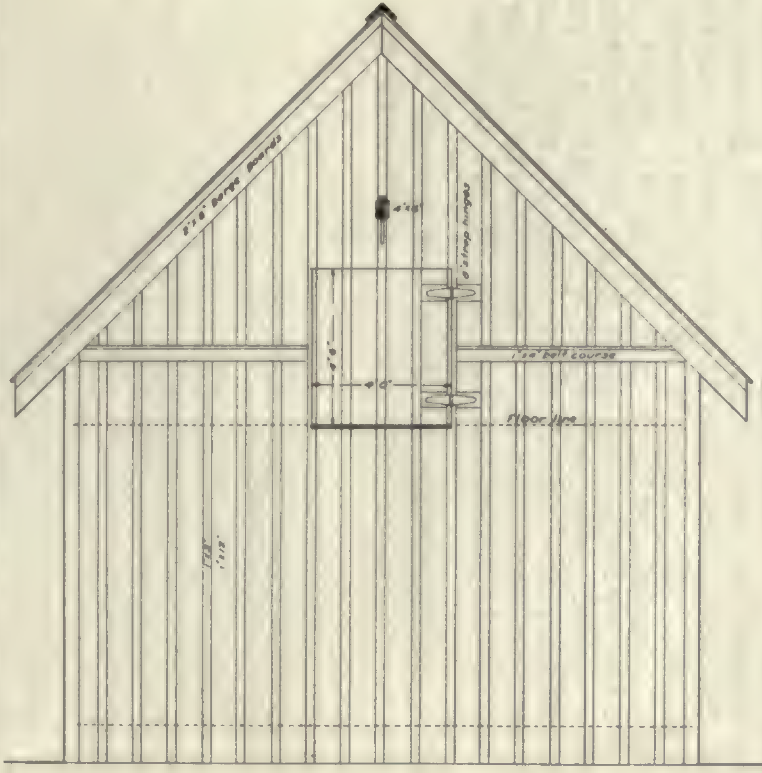
PLAN NO 2D
BARN & WAGON SHED



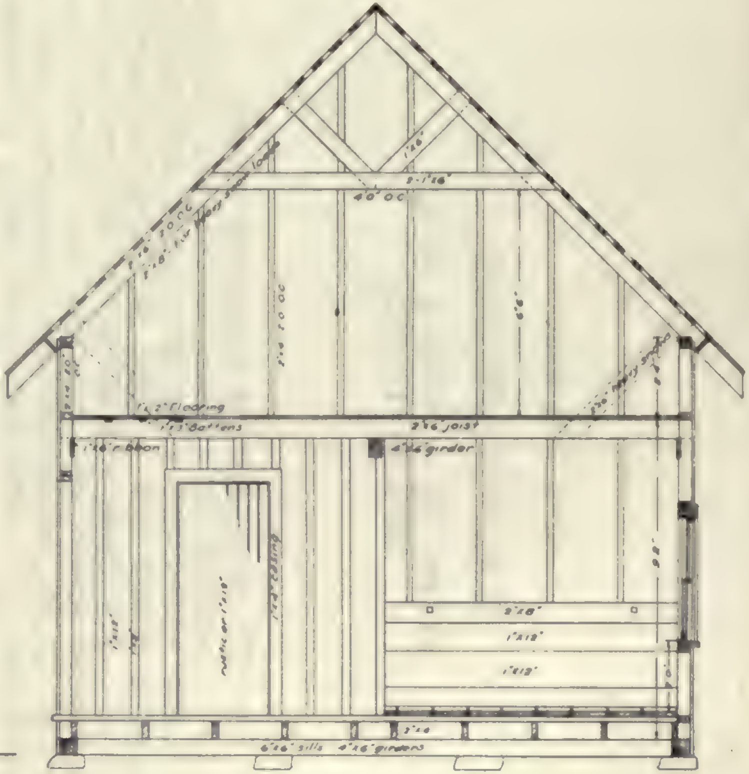
SECTION

PLAN NO 2D
BARN & WAGON SHED

SCALE



END ELEVATION



SECTION

PLAN NO. 2-D

BARN AND WAGON SHED

18'0" x 40'0" - 12' Walls
1/2 Pitch Roof

Items preceded by the mark (*) are standard and are not subject to change or choice. Elevation of the particular building site will determine the dimensions of roof frame material to use. All items subject to change or choice are indicated by the mark (#). To prepare a complete order list, select the items marked (#) which, under the particular circumstances, will be best adapted for use at a given building site. Add such items to those marked (*). To all items of lumber add the specifications shown under "Grade and Species" and "Finish". For example, two pieces 4" x 6" - 16' No. 1 Common, redwood, cedar, Douglas fir or pine, rough. To all items of hardware add only such descriptive matter as is necessary to adequately describe each item. For example, 2 pounds 30d. common wire nails - 3 pounds 30d. fine galvanized wire nails. Do not show on the order list the purpose for which the hardware items are to be used.

Estimated cost of construction - labor at $4.00 per day $140.00.

BUILDER'S LIST OF MATERIALS

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
		Sills, Girders and Underpinning.			
* 3	6 x 6 - 18	Sills	(1st choice,No.2 Clear R.W.or	Rough	162
* 5	6 x 6 - 16	"	(heart cedar	"	240
* 4	4 x 6 - 18	" and girders	(2nd " " " " D.F.,W.F.or	"	144
* 1	4 x 6 - 12	Girders	(3rd " Y.P. " " "/R.F.	"	24
	6 x 6	Underpinning	Heart cedar or Redwood		

Note:-For item of "Underpinning" no amount is given. The actual amount needed will depend upon the slope of the ground of each particular building site. Make due allowance for this item in the lumber order. If split or round material is used, this item may be eliminated from the lumber list.

		Studding, Plates, Joists, etc.			
*10	4 x 4 - 12	Studding (main walls)	No. 1 Common, any species	Rough	160
*42	2 x 4 - 12	" " "	" " " " "	"	336
*18	2 x 4 - 16	" (shed and partition)	" " " " "	"	192
* 1	4 x 4 - 16	" (shed)	" " " " "	"	22
* 8	2 x 4 - 18	Plates	" " " " "	"	96
* 8	2 x 4 - 14	"	" " " " "	"	75
* 8	2 x 4 - 12	"	" " " " "	"	64
* 6	2 x 4 - 16	Door & window trimmers	" " " " "	"	64
*17	2 x 6 - 18	Mow joists	Same as sills	"	306
* 6	2 x 6 - 18	Floor joists ¢	" " "	"	108
*12	2 x 6 - 12	" " ¢	" " "	"	144
* 4	2 x 6 - 18	" " ¢	" " "	"	72
* 4	1 x 6 - 14	Joist ribbon	" " "	"	28
*24	2 x12 - 18	Floor plank ¢	No. 1 Common, any species	"	448
* 9	1 x12 - 18	Grain or saddle room floor (double)	" " " " "	"	162

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
		Sheeting, Floor Walls, etc.			
*504	Bd.Ft.1x12	Haymow floor	No.1 Common, any species	Rough	504
*536	Lin."5/8x3	Battens, haymow floor	" " " " "	"	134
*95	1 x12 - 12	Wall cover	" " " " "	"	1140
*24	1 x12 - 16	" "	" " " " "	"	384
*22	1 x12 - 12	" " cable	" " " " "	"	264
*1700	Lin.Ft.5/8 x 3	Battens	" " " " "	"	425
*18	1 x12 - 16	Partitions	" " " " "	"	288
*150	Lin.Ft. 5/8 x 3	Battens, partitions	" " " " "	"	37
ROOF.					
		Main Roof (For elevations up to 2000 feet).			
#30	2 x 4 - 14	Rafters	No.2 Clear, Douglas fir	"	280
# 2	1 x 8 - 14	Ridge boards	No.1 Common, any species	"	22
# 4	2 x 8 - 14	Barge boards	" " " " "	"	72
# 4	1 x 2 - 14	" " trim	" " " " "	"	10
# 2	1 x12 - 14	Soffit	" " " " "	"	28
# 4	1 x 6 - 14	Gable frieze	" " " " "	"	28
# 4	1 x 6 - 14	Rafter end frieze	" " " "	"	28
#14	1 x 6 - 14	Collar beams	No. 2 Clear, Douglas fir	"	98
# 6	1 x 6 - 16	Struts	" " " " "	"	48
# 4	1 x12 - 16	Rafter end sheeting	No. 1 Common, any species	"	64
# 4	1 x 6 - 16	" " "	" " " " "	"	32
#	1 x 4	Sheeting 8" O.C.	No. 2 " " "	"	475
#7800		Shingles, 4½" to weather	Star A Star, Red cedar		
#32		7' Galvanized Corrugated	roofing, 26-gauge		
#32		8' " "	" " "		
#32	Lin. Ft.	Plain galvanized ridge capping, 26-gauge, 6" sides			
#	1 x 6	Sheeting	No. 1 Common, any species	"	16

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
	Shed Roof.				
#15	2 x 4 - 16	Jack rafters	No. 2 Clear, Douglas fir	Rough	160
# 2	2 x 4 - 20	Hip rafters	" " " " "	"	27
# 4	1 x 6 - 16	Rafter end frieze	No. 1 Common, any species	"	32
# 6	1 x12 - 14	" " sheeting	" " " " "	"	84
#475	Bd.Ft.1x4	Sheeting, 8" O.C.	" 2 " " "	"	475
#2250		Shingles, 4½" to weather	Star A Star, Red cedar		
# 5	1 x 6 - 16	Ridge Boards	No. 1 Common, any species	"	40
	Main Roof (For elevations between 2000 and 3500 feet)				
# 2	1 x 8 - 16	Ridge Board	No. 1 Common, any species	"	22
#30	2 x 6 - 14	Rafters	Same as sills	"	420
# 4	2 x 6 - 14	Barge Boards	No. 1 Common, any species	"	56
# 4	1 x 2 - 16	" " trim	" " " " "	"	64
# 4	1 x 6 - 14	Gable frieze	" " " " "	"	28
# 4	1 x 6 - 14	Rafter end frieze	" " " " "	"	28
#14	1 x 6 - 14	Collar beams	" " " " "	"	98
# 6	1 x 6 - 16	Struts	" " " " "	"	48
# 4	1 x12 - 16	Rafter end sheeting	" " " " "	"	56
# 4	1 x 6 - 16	" " "	" " " " "	"	32
#500	Bd.Ft.1x4	Sheeting 8" O.C.	" 2 " " "	"	500
#7800		Shingles, 4½" to weather	Star A Star, Red cedar		
# 4	1 x 6 - 16	Ridge board	No. 1 Common, any species	"	32

Or

If shakes are to be used, see Shake Table for amount of sheeting, shakes, and amount of nails per square.

Or

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
#32		Corrugated Galvanized roofing, 26 gauge.			
#225	Bd.Ft.1x6	Sheeting	No. 2 Common, any species		225
#32	Lin. Ft.	26 gauge plain galvanized ridge cap 6" sides.			

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
	Shed Roof.				
*15	2 x 6 - 16	Jack rafters	No. 1 Common, any species	Rough	240
* 2	2 x 6 - 20	Hip rafters	" " " " "	"	40
* 4	1 x 6 - 16	Rafter end frieze	" " " " "	"	32
* 3	1 x12 - 14	" " "	" " " " "	"	42
*170	Bd.Ft.1 x 4	Sheeting 8" O.C.	" 2 " " "	"	170
#2250		Shingles,5" to weather	Star A Star Red cedar		
* 6	1 x 6 - 16	Ridge boards	No. 1 Common, any species	"	48
	Main Roof (For Elevations over 3500 feet) Projection 1' 3".				
#30	2 x 8 - 14	Rafters	No. 2 Clear, Douglas fir	"	560
# 2	1 x10 -14	Ridge boards	No. 1 Common, any species	"	24
# 4	2 x 8 - 14	Barge boards	" " " " "	"	75
# 4	1 x 2 - 14	" " trim	" " " " "	"	10
# 4	1 x 8 - 14	Gable frieze	" " " " "	"	38
# 4	1 x 8 - 14	Rafter end frieze	" " " " "	"	38
# 2	1 x12 - 14	Soffit	" " " " "	"	28
#14	1 x 8 - 14	Collar beams	" 2 Clear, Douglas fir	"	131
# 6	1 x 8 - 16	Struts	" " " " "	"	96
# 4	1 x12 - 16	Rafter end sheeting	" 1 Common, any species	"	64
# 4	1 x 6 - 16	" " "	" " " " "	"	32
#475	Bd.Ft.1x4	Sheeting, 8" O.C.	" 2 " " "	"	475
#7250		Shingles,4½"to weather	Star A Star, Red cedar		
	Or				
#32	Lin.Ft.	Plain galvanized ridge capping, 26-gauge, 6" sides			
#32		7' Sheets corrugated galvanized roofing, 26 gauge			
#32		8' " " " " " "			
#225	Bd.Ft.1x6	Sheeting	No. 2 Common, any species	"	225

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
	Shed Roof.				
#15	2 x 6 - 16	Jack rafters	No. 2 Clear, Douglas fir	Rough	240
# 2	2 x 8 - 20	Hip rafters	" " " " "	"	54
# 4	1 x 8 - 16	Rafter end frieze	No. 1 Common, any species	"	43
# 6	1 x12 - 14	" " sheeting	" " " " "	"	84
#	1 x 4	Sheeting, 8" O.C.	" 2 " " "	"	275
#2250		Shingles, 4½" to weather	Star A Star, Red cedar		
# 5	1 x 6 - 16	Ridge boards	No. 1 Common, any species	"	40
	Manger and Stalls.				
* 1	2 x 8 - 18	Tie piece	" " " " "	"	24
* 1	2 x 8 - 12	" "	" " " " "	"	16
* 6	1 x12 - 18	Manger boxing	" " " " "	"	108
* 4	2 x 4 - 18	" frame	" " " " "	"	48
* 1	1 x12 - 16	Grain boxes	" " " " "	"	16
* 2	1 x 8 - 12	" "	" " " " "	"	16
* 4	2 x12 - 16	Stall partition	" " " " "	"	96
* 2	2 x 6 - 12	" " frame	" " " " "	"	24
	Grain Box				
* 3	2 x 4 - 16	Frame	" " " " "	"	32
*14	1 x 8 - 16	Shiplap	"C"Grade California, any species, or No. 2 Clear Oregon D.F.		150

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
		Doors and Windows.			
* 5	1 x 6 - 18	Door cleats	No. 1 Common, any species	Rough	45
* 1	2 x 8 - 6	Window sill	" " " " "	S1S	8
* 1	1 x12 - 16	Window frame	" " " " "	"	16
* 5	½ x 2 - 14	" and door stops	" " " " "	Rough	3
4	2 x 4 - 18	Extras	" " " " "	"	48
*10	2 x 4 - 12		" " " " "	"	80
* 6	1 x12-- 16		" " " " "	"	96
* 6	1 x 6 - 16		" " " " "	"	48

Hardware List.

#15 lbs. Nails,No.9,2" Galv. roofing, for galvanized iron.
#33 " 3d. " , fine galvanized shingle.
* 7 " 3d. " , " " "
# 5 " No. 8 lead washers for use with galvanized iron.
*10 " 6d. " ,Common
*30 " 8d. " , "
*150 " 10d. " , "
*35 " 16d. " , "
*50 " 20d. " , "
*10 " 30d. " , "
*10 " 60d. " , "
* 5 " 8d. " , finish.
* 2 pr. 3½" half surface butts
* 4 " 10" Heavy strap hinges.
* 2 " 3" Strap hinges for grain bin
* 4 " 6" Door hooks and staples.
* 3 " 8" Hasps and Staples.

Mill Order List.

* 2 2'6" x 3'6" Windows
* 2 2'10"x 6'8" Doors.

Paint.

*11 Gal. Regulation Gray Outside Body Paint.
* 1½ " " White trim "
*10 " " Green Roof "
2 " Linseed Oil
½ " Turpentine

Note:- If Laird & Sinclair paint is used, deduct the Linseed Oil and Turpentine, and add

1 Gal. Aroturps to each 5 gallons of paint on the above list.

SPECIFICATIONS

FOR

BARN AND WAGON SHED

18'0" x 40'0" - 12' Walls
1/2 Pitch Roof

These specifications are intended to embrace all material necessary in the erection and completion of the building in all its parts, and to furnish such instructions as appear necessary to give the builder a general idea of the plan. Variations due to different locations and accessibility of lumber markets have been considered and estimates prepared accordingly.

The general plan as regards construction of frame and other vital parts of the structures is to be followed unless permission to deviate from the plans and specifications has first been secured from the District Forester. Deviations of minor consequence, however, to take care of unforeseen local conditions and circumstances may be made by the builder.

EXCAVATION.

Excavation for the foundation of the building shall be carried down to solid earth. If practicable, the surface of the excavation shall be level and smooth. When necessary to grade into unlevel ground for the purpose of providing a level building site, the slopes of the excavations resulting must clear the sides of the building by at least 3 feet. If necessary, provision should be made to prevent earth caving from the embankment from contacting with the sills. If foundation posts are of wood, they too should be protected.

FOUNDATION.

Do not place foundation blocks or underpinning further apart than 7 feet on center. Where snow loads are excessive, or the ground is not firm, place foundation blocks or underpinning on 4 foot center under all outside sills; on 6 foot centers under all exterior sills and girts. Where underpinning on short centers are necessary, add sufficient material to the lumber order list to provide for them.

Foundation blocks shall ordinarily be of large flat stones of sufficient thickness to raise the sills at least 6" above the ground. The sills shall be placed directly on these stones. If stones of appropriate size are not available, concrete or masonry blocks shall be provided. See the "Concrete Section"- Foundations, of this Circular. A dry wall shall be set up between the foundation blocks under all outside sills. If the building site is not level, and if to grade it level throughout, is impracticable, foundations shall be either of -

(a).- 6" x 6" heart cedar, redwood or Douglas fir underpinning, set upon substantial flat stones of sufficient thickness to project at least 4 inches above the ground. Wood blocks should never be used for footings under foundation posts.

(b).- If substantial stones are not available, a masonry footing should be provided. For masonry, use only hard stones, preferably flat ones. All should be carefully imbedded on their broadest faces in mortar of 1 part cement and 2 parts coarse, clean, sharp sand. Each layer should be well filled and flushed up on both sides and firmly bonded together. The tops should be made level to receive the underpinning. See Table No. C-4.

MATERIALS.

All structural materials should conform as closely as possible to the specifications given in the builder's list and lumber order list. That minor deviations must sometimes be made is recognized as unaviodable.

SILLS.

Should preferably be of cedar or redwood. Douglas fir may be used as a second choice.

Rectangular sills should be laid with the narrow face up.

Sills at corner should be halved together. When two or more pieces are necessary to form the total length of sill, a splice should be made on the foundation supports, as indicated on the plan (see Cut No.B.M.-9)

Two or more joints should not occur on the same line of foundation posts. Arrange to have the splices made over foundation posts of different sets.

FLOOR JOISTS, STUDDING, GIRDERS, ETC.

Floor joists should be of selected sticks, straight grain and free from all knots larger than 1 inch in diameter; 1st choice being Douglas fir, 2nd choice White fir, 3rd choice Yellow pine. Studding, headers, trimmers, plates, etc., may be of any straight grain material free from loose knots and knots which materially weaken the stick. Lay floor joists directly upon the sills. Where two joists form the span, use the lap joint; in all cases place the bow of the joists up.

Corner studs should be 4" x 4". The plan indicates methods of placing studs.

Headers over window openings and door openings should be double.

Girts of 2" x 4" scantling should be placed horizontally in all outside walls midway between the top and bottom plates.

A 4" x 6" girt shall be run in the center the full length of the barn as a support to the upper floor joist. It shall be spliced over one 4" x 4" stall stud. 1" x 6" x 2' side plates shall be spiked to the sides of the girders and a bottom plate of 2" x 6" x 2' shall be placed between the girder and the top of the stud. It shall be spiked to the girder and to the side plates. Toe nails shall be driven through the studding into this bottom plate.

The upper floor joist shall be placed crosswise of the barn. A ribbon of 1" x 6" material shall be cut into the studding at the elevation shown in the plan. The outside of the ribbon shall be flush with the edge of the studding. The ends of the floor joist shall rest upon this ribbon. Spike the floor joist to the studding with 3 - 20d. nails.

ROOF.

Material for roofs of different pitches are provided in the lists. Within the respective ranges of elevations stated, use the roof recommended. Exception shall occur only where snowfall is not a source of risk as on the Southern Forests and on the Modoc.

Rafters and other members of the roof frame should be of selected straight grain lumber; 1st choice Douglas fir, 2nd choice white fir, 3rd choice Yellow pine, free from knots and other imperfections. Too much attention cannot be given to the selection of the best sticks of the lumber order for rafters.

Care should be taken to cut the rafters true in order that they rest firmly on the plate, meet squarely at the apex of the roof.

Rafters shall be braced as shown in the Plan. Dimensions of material to be used for braces will vary in the different types of roofs.

Roof projections should be sheeted solid with 1" x 12" rough or dressed lumber.

Rafter ends should be finished in the manner illustrated by the diagram "Section".

Use for roof covering either -

(a).- Star A. Star Red cedar or Redwood shingles
(b).- Shakes of White fir or Sugar pine.
(c).- Galvanized iron (See B.M. Page 8.)

Lay shingles 4½" to weather on sheeting 8" on center. Nail them with 3d. fine galvanized shingle nails. Lay bottom course of shingles double and project it 1½ inches beyond the sheeting. Allow a 1 inch projection of shingles over the barge board trim. Table No. B.M.-2 gives data on shakes. If shakes are used, allow 1½" projection at eaves and 1" projection over barge board trim.

The ridge of the roof should be finished with 1" x 6", excepting in cases where galvanized iron roofing is used. With it, use galvanized ridge capping.

SIDING.

Use 1" x 12" boards and 1" x 3" battens, free from loose knots and all knots of a greater diameter than 1½ inch. Boards should also be free from weather check, rot, disfigurements and large pitch pockets. Finish the corners with 1" x 4" boards.

FLOOR.

Except in the grain room or saddle room, at the option of the builder flooring may or may not be used. Ordinarily, if drainage is good, to not install the floor will be advisable. If not installed, the items of flooring after which the (¢) mark appears, should be omitted from the order list. If the floor is installed, it shall be laid as shown in the plan. Note that the floor in the stalls shall have a slope of about 2" from front to back. The flooring in the grain room shall be 1" x 12" boards, double. The flooring overhead shall be 1" x 12" with 5/8" x 3" battens under cracks. No floors shall be placed in the shed.

STALLS, PARTITIONS, ETC.

The grain room partitions shall be put up as shown in the plan, and may be lined with boards and battens. Care should be taken to put on the lining tight enough to prevent the entrance of rodents.

A detailed plan is given of the grain box in Detail 6-D. If desired, it may be placed on a support to provide more room under the mouth of the opening at the bottom.

Stalls shall be constructed as shown in the plan. If no flooring is used, proper blocks shall be set at appropriate places to carry the 4" x 4" studding between the stalls. They shall be set upon a stone at least 6" deep and 8" square, and 6" x 6" blocks. A plan for mangers of ordinary type is shown, but size and type of mangers may be varied to suit particular conditions and circumstances. In the event the plan shown for mangers is not used, the same substantial construction standards must be followed in all deviations. If flooring is not used, the elevation of the mangers may be lowered to obtain proper height for them. Mangers shall be placed in the shed to provide for standing place for extra horses.

Racks of the type popular in a given locality may be used if desired. Where loose hay is fed, racks are very appropriate.

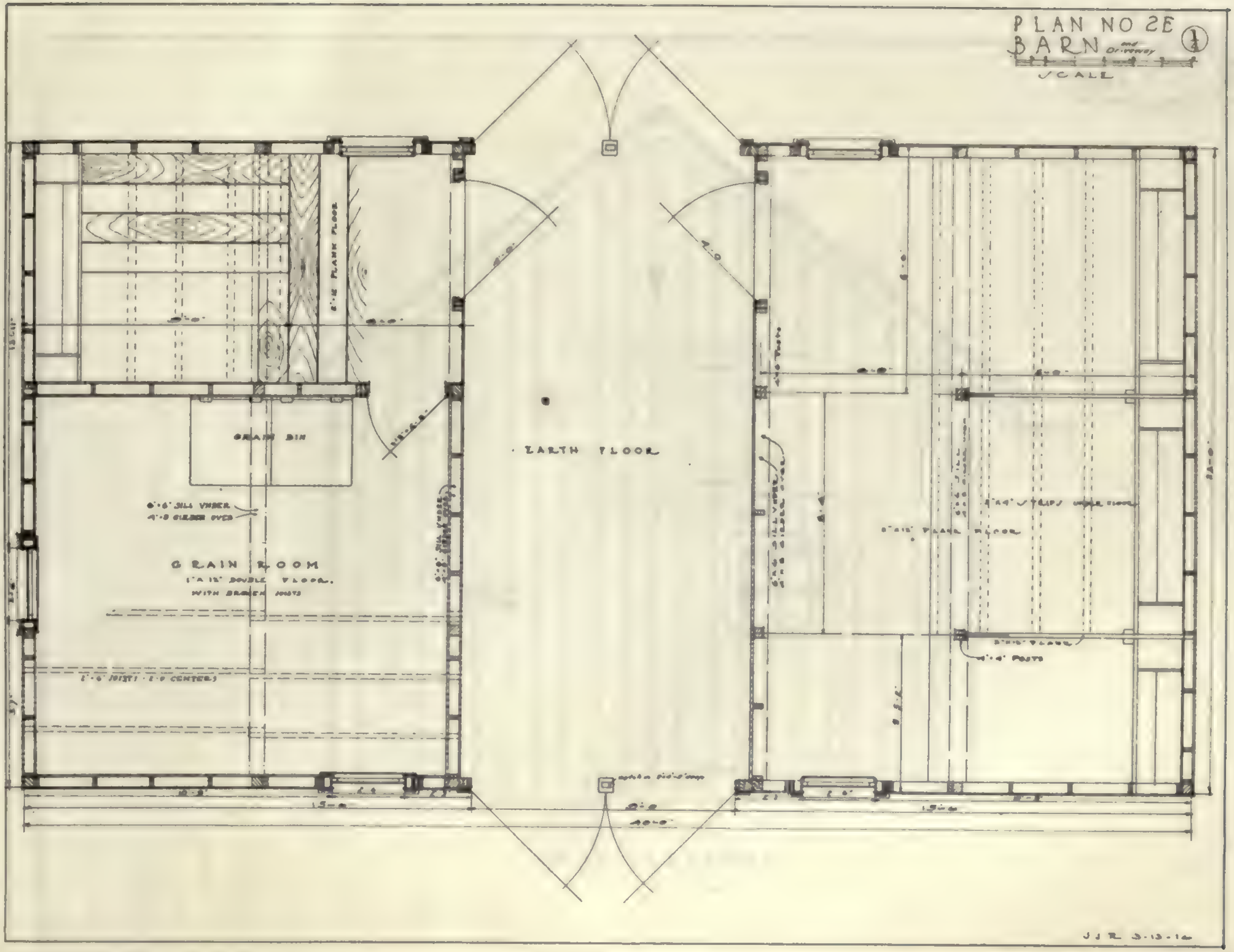
DOORS AND WINDOWS.

Make the window frames as shown in the detail drawing of them.

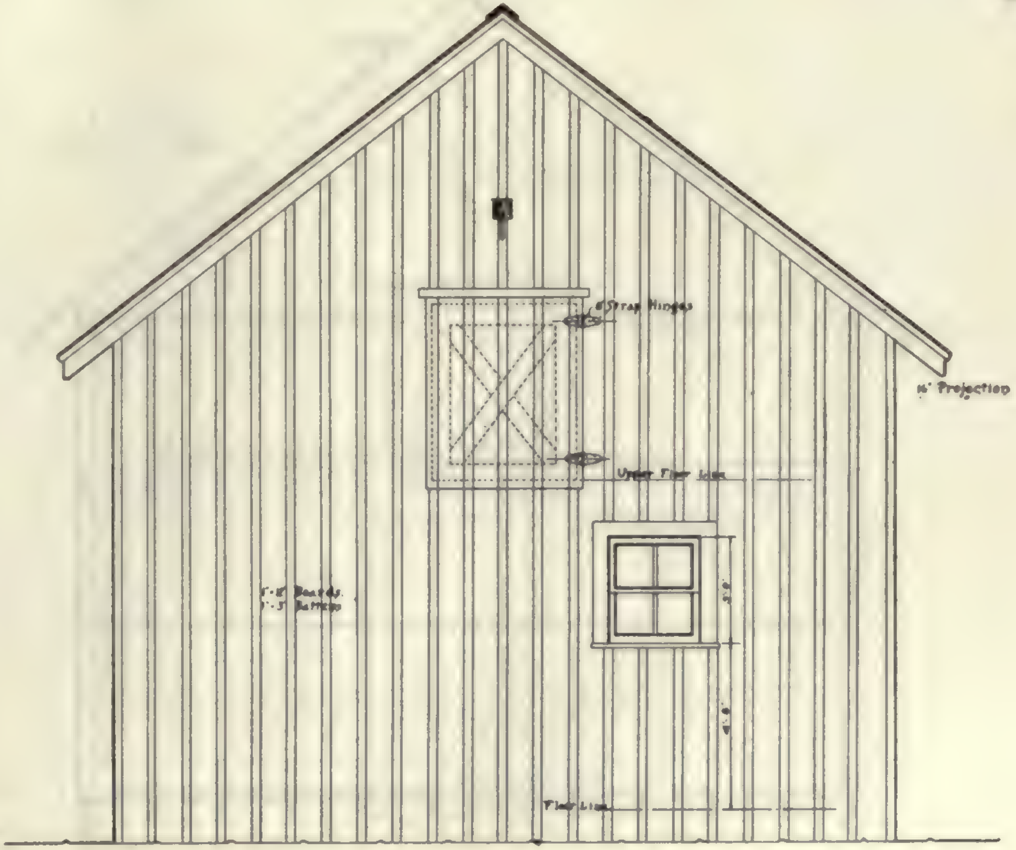
PAINTING.

Color - Body - Standard gray, 2 coats.
Roof - " Green, 2 "
Trim - " White, 2 "

If the structural material is dry, apply the first coat as soon as the siding and roof are placed. If the lumber and roofing are not dry, apply paint as soon as the condition of the lumber will permit. Put on the second coat as soon as the first coat is dry. Do not paint if lumber is not thoroughly dry or if the surface is damp from rains, fog, frost, etc. Do not paint during damp weather. See the paint section of the Circular.


PLAN NO 2E
BARN and Driveway
1/4
SCALE
EARTH FLOOR
GRAIN BIN
GRAIN ROOM
1"x12" DOUBLE FLOOR.
WITH BRIDGED JOISTS
6"·6" SILL UNDER
4"·8 GIRDER OVER
2"·8" JOISTS · 2·0 CENTERS
PLANK FLOOR
2"x4" STRIPS UNDER FLOOR
PLANK FLOOR
4"·4" POSTS
15'-0"
10'-0"
15'-0"
40'-0"
26'-0"
J J R 3-13-16

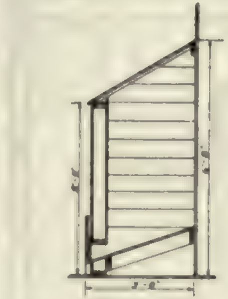
PLAN NO 2E
BARN and Driveway ②
SCALE



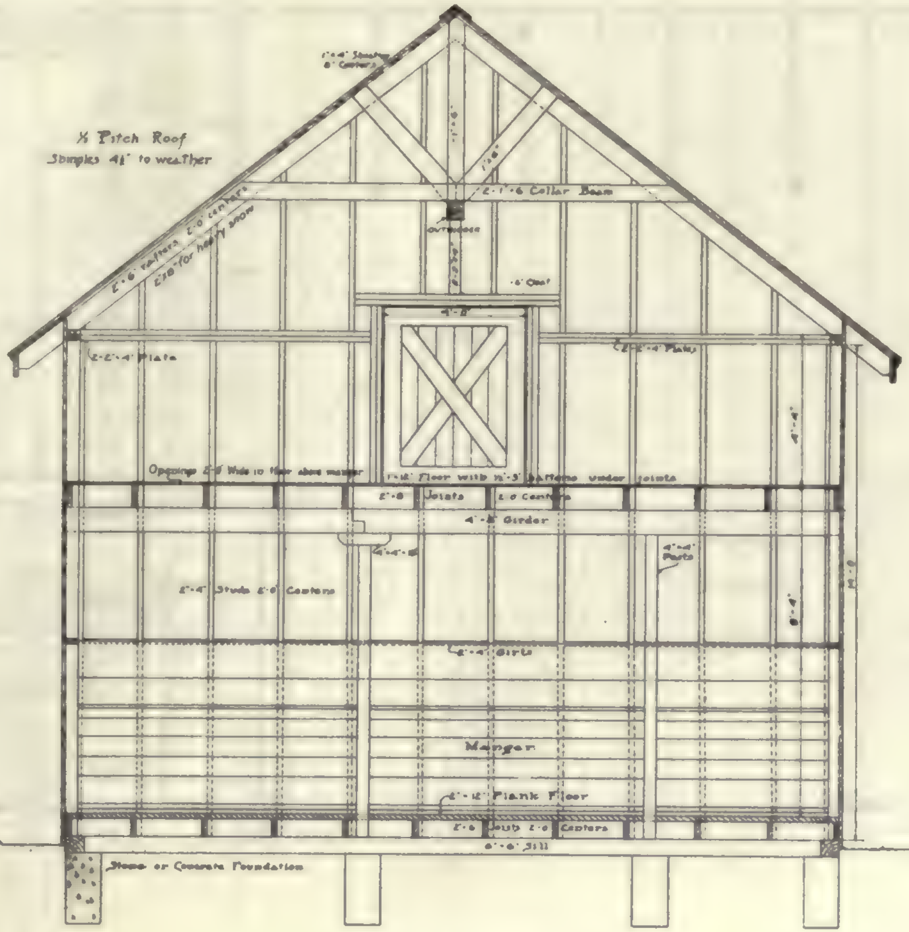
END ELEVATION

PLAN NO 2E
BARN and Driveway ③

SCALE

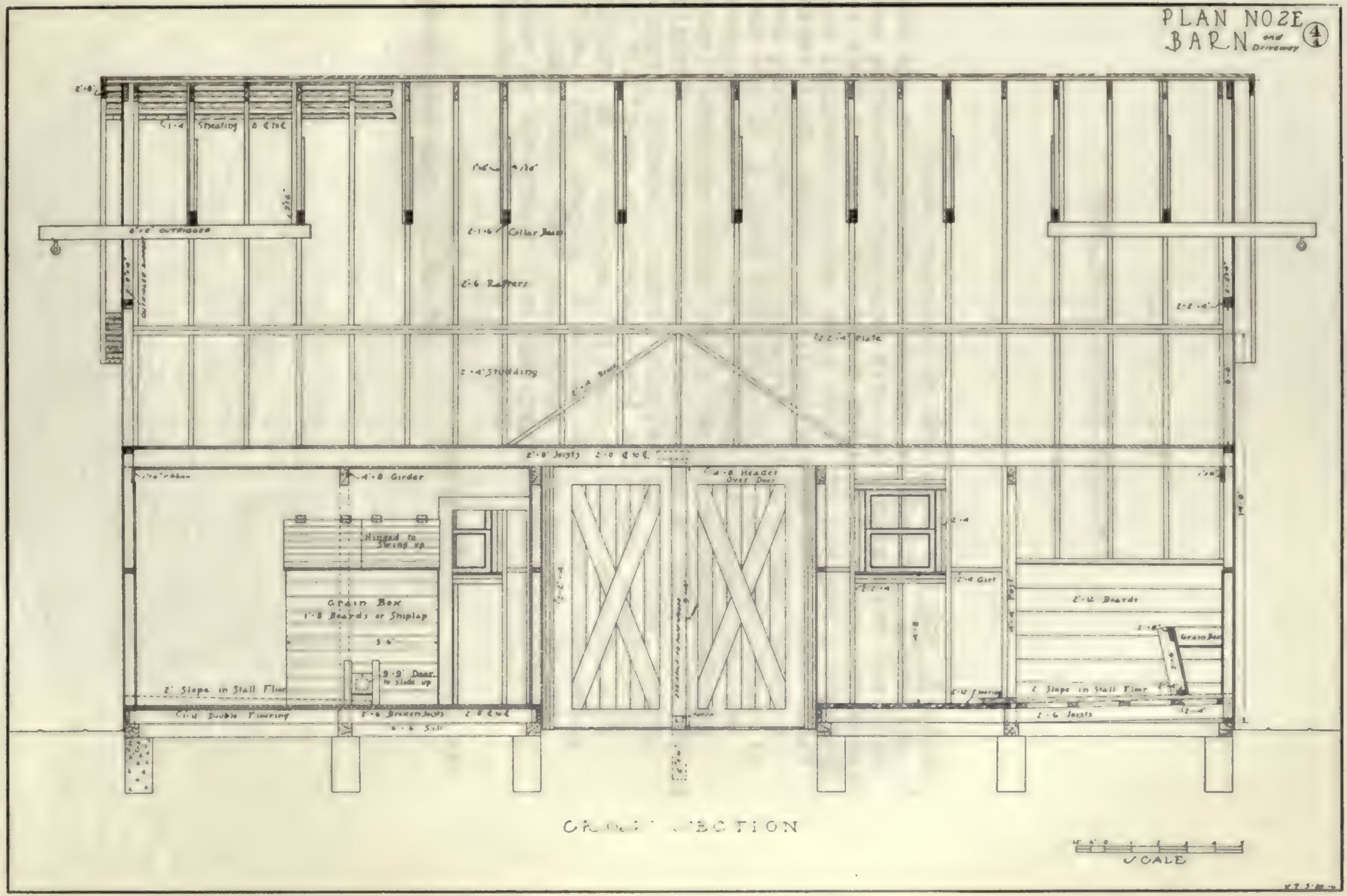


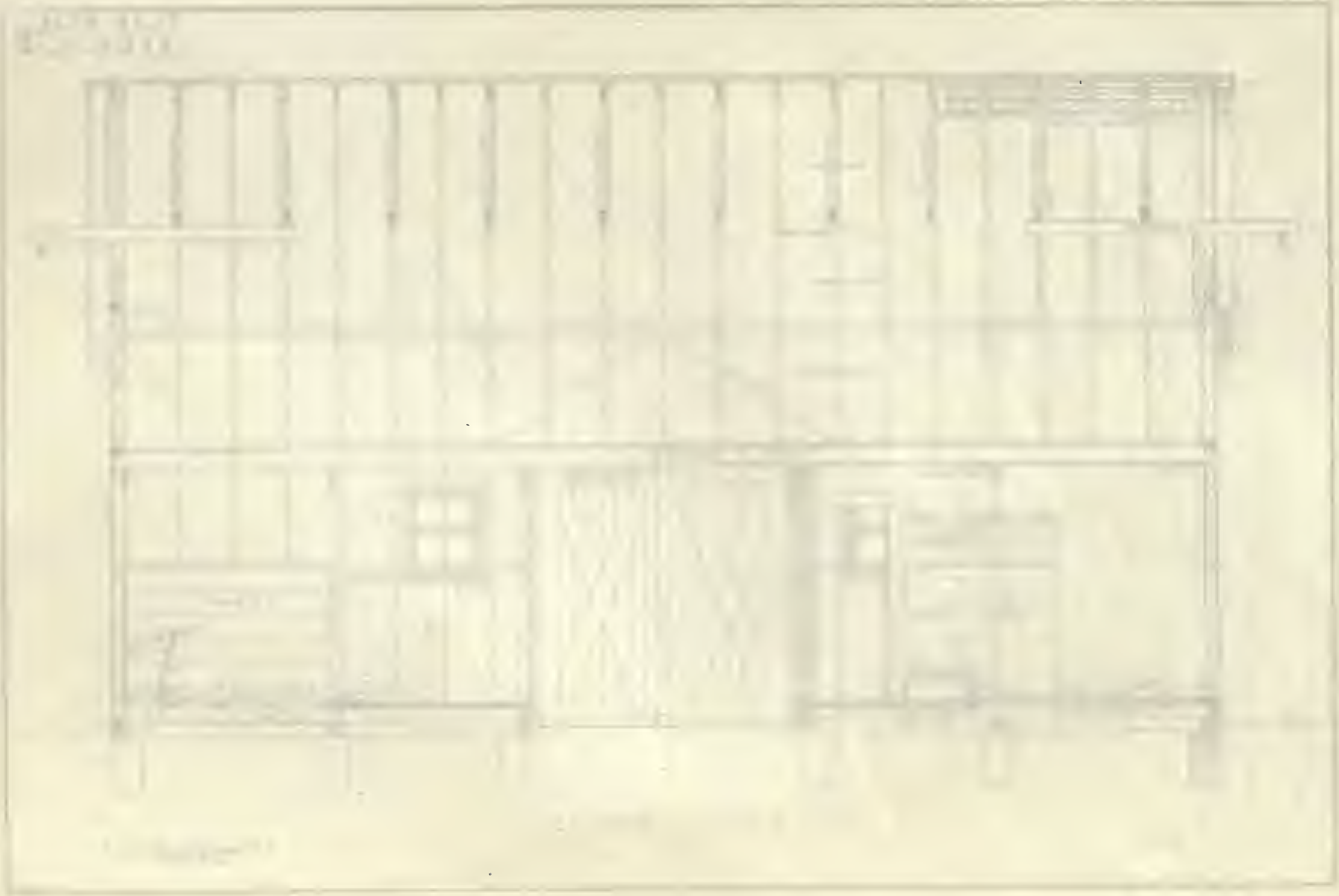
SECTION THRU GRAIN BOX



CROSS SECTION

V.T. 5-10-10.


PLAN NOZE
BARN and Driveway
4/4
2·8
1·4 Sheating 8 & 10 ft
2·16
2·6 Rafters
2·1·6 Collar Beam
6·16 OUTRIGGER
2·6·4
2·2·4 Plate
2·4 Studding
2·4 Brace
2·8 Joists 2·0 & 10 ft
1·6 ribbon
4·8 Girder
Hinged to Swing up
Grain Box
1·8 Boards or Shiplap
3·6
9·9 Door to slide up
2 Slope in Stall Floor
2·12 Double Flooring
2·6 Broken Joists
2·8 End
6·6 Sill
4·8 Header Over Door
2·4
2·4 Girt
2·12 Boards
Grain Box
2·6 Joists
2·12 Flooring
CROSS SECTION
SCALE



PLAN NO. 2-E

BARN WITH CENTER DRIVEWAY

22'0" x 40'0"-14'Walls

Items preceded by the mark (*) are standard and are not subject to change or choice. Elevation of the particular building site will determine the type of roof to use. All items subject to change or choice are indicated by the mark (#). To prepare a complete order list, select the items marked (#), which under the particular circumstances, will be best adapted for use at a given building site. Add such items to those marked (*). To all items of lumber, add the specifications shown under "Grade and Species" and "Finish". For example, two pieces 4" x 6" - 16' No. 1 common, redwood, cedar, Douglas fir or pine, rough. To all items of hardware add only such descriptive matter as is necessary to adequately describe each item. For example, 2 pounds 30d. common wire nails - 3 pounds 30d. fine galvanized wire nails. Do not show on the order list the purpose for which the hardware items are to be used.

Estimated cost of construction - labor at $4.00 per day - $160.00.

BUILDER'S LIST OF MATERIALS.

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
		Sills and Girders			
* 3	6 x 6 - 14	Sills	(1st choice, No.2Clear, Heart	Rough	126
*10	6 x 6 - 16	"	(Cedar or R.W.	"	480
* 4	2 x 6 - 12	Sill splicers	(2nd " D.F., W.F. or R.F.	"	48
			(3rd " Y.P.		
* 4	4 x 8 - 14	Ceiling girders	Same as above	"	150
* 2	4 x 8 - 18	" "	" " "		96
* 1	2 x 8 - 16	Splicing plates	" " "		22
		Underpinning -- See specifications.			
		Studs, Plates, Joists, etc.			
*12	4 x 4 - 14	Studding	No. 1 Common, any species	"	224
*56	2 x 4 - 14	"	" " " " "	"	584
*16	2 x 4 - 16	"	" " " " "	"	171
* 4	4 x 4 - 18	"	" " " " "	"	96
* 8	2 x 4 - 12	Plates	" " " " "	"	64
*14	2 x 4 - 16	"	" " " " "	"	150
* 8	2 x 4 - 16	Door and window trimmers	" " " " "	"	86
*12	2 x 8 - 12	Mow joist	Same as sills and girders	"	192
*24	2 x 8 - 16	" "	" " " " "	"	512
*16	2 x 6 - 16	Floor joists ¢	" " " " "	"	256
* 7	2 x 6 - 16	" " ¢	" " " " "	"	112
* 3	1 x 6 - 16	Joist ribbon	" " " " "	"	24
* 2	2 x 4 - 16	Cross bridging in joists over driveway	No. 1 Common, any species	"	22
*27	2 x 4 - 16	Girts	" " " " "	"	288
* 8	2 x 4 - 16	Furring for plank floor	" 2 Clear, Douglas fir	"	86

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
	Sheeting, Floor, Walls, etc.				
*148	1 x12 - 16	Side walls and gable	No. 1 Common any species	Rough	2368
*2200	Lin.Ft.5/8 x 3	Battens	" 1 Common Pine or Redwood	"	550
*980	Bd.Ft.1x12	Flooring, loft	" 1 Common, any species	"	980
*880	Lin.Ft.5/8 x 3	Battens	" " " " "	"	220
*14	2 x12 - 12	Floor plank ¢	" " " " "	"	336
*15	2 x12 - 18	" " "	" " " " "	"	540
* 3	2 x12 - 16	" " "	" " " " "	"	96
*30	1 x12 - 14	Double floor in grain roof	" " " " "	"	420
	Inside Partitions.				
*20	1 x12 - 14	Walls and doors on either side of wagon space	" " " " "	"	280
*14	1 x12 - 16	Same as above	" " " " "	"	224
*50	1 x12 - 14	Lining for walls and ceiling of grain room	" " " " "	"	700
* 9	1 x12 - 12	Lining for wall between stalls and grain room	" " " " "	"	108
*50	½ x 3 - 14	Battens	" " " " "	"	175

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
	Roof (Elevation up to 3000 feet)				
#42	2 x 6 - 16	Rafters	Same as sills and girders	Rough	672
# 3	1 x 8 - 14	Ridge boards	No. 1 Common, any species	"	28
# 4	2 x 8 - 16	Barge boards	" " " " "	"	86
# 4	1 x 2 - 16	" " trim	" " " " "	"	11
# 4	1 x 6 - 16	Gable end frieze	" " " " "	"	32
# 5	1 x 6 - 16	Rafter end frieze	" " " " "	"	40
#20	1 x 6 - 14	Collar beams	Same as sills and girders	"	140
#11	1 x 6 - 16	Struts	" " " " "	"	132
*11	1 x12 - 16	Rafter end sheeting	No. 2 Common, any species	"	176
#11500		Shingles	Star A Star, Red cedar		
	Roof (Elevations over 3000 feet). 1/2 pitch - 12" projection				
#42	2 x 8 - 18	Rafters	Same as sills and girders	"	1008
# 3	1 x10 - 14	Ridge board	No. 1 common, any species	"	35
# 4	2 x 8 - 18	Barge "	" " " " "	"	128
# 4	1 x 2 - 18	" " trim	" " " " "	"	12
# 4	1 x 8 - 16	Gable end frieze	" " " " "	"	43
# 4	1 x 8 - 14	Rafter end frieze	" " " " "	"	38
#20	1 x 8 - 12	Collar beams	Same as sills and girders	"	160
#11	1 x 8 - 16	Struts	" " " " "	"	112
#12,750		Shingles	Star A Star, Red cedar		
* 1	2 x 6 - 16	Outrigger brace	Same as sills and girders	"	16
* 1	6 x 6 - 18	" "	" " " " "	"	54
*720	Bd.Ft.1x4	Sheeting, 8" O.C.	No. 2 Common, any species	"	720
# 3	1 x 6 - 16	Ridge boards	No. 1 " " "	"	24
# 2	1 x 6 - 18	" "	" " " " "	"	18
	Or				

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
		Roof (Elevations over 3000 feet)-Continued.			

If shakes are to be used, see Improvement Manual for amount required per square, amount of board covering, and also amount of nails.

Or

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
#43	Lin.Ft.	Plain galvanized ridge capping, 26 gauge, 6" sides			
#43	9'0"	Corrugated galvanized roofing, 26 gauge			
#43	8'0"	" " " " "			
#225	Bd.Ft.1 x 6	Sheeting	No. 2, Common, any species	Rough	225
		Manger and Stalls.			
*2	1 x12 - 16	Mangers	No. 1 Common, any species	"	32
* 6	1 x12 - 14	"	" " " " "	"	84
* 2	1 x 8 - 12	Feed boxes	" " " " "	"	16
* 3	1 x12 - 12	" "	" " " " "	"	36
* 1	2 x 8 - 16	Tie pole	" " " " "	"	22
* 1	2 x 8 - 18	" "	" " " " "	"	24
* 6	2 x 4 - 16	Manger frame	" " " " "	"	64
* 6	2 x12 - 16	Stall partitions	" " " " "	"	192
		Miscellaneous.			
# 6	1 x 4 - 18	Ladders, etc.	" " " " "	"	36
# 6	2 x 4 - 18	Scaffolding	" " " " "	"	72
# 6	2 x 4 - 14	"	" " " " "	"	76
# 6	1 x 6 - 16	" bracing	" " " " "	"	48
# 6	1 x12 - 12	"	" " " " "	"	72

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
	Grain Box.				
* 3	2 x 4 - 16	Frame	No. 1 Common, any species	Rough	32
*14	1 x 8 - 16	Covering, shiplap	"C"Grade"California, Any species, or No.3 Clear Oregon D.F.		150
	Doors and Windows				
* 8	1 x 6 - 16	Door braces	No. 1 Common, any species	Rough or S3S	64
* 1	6 x 6 - 8	Double door blocks	" " " " "	" " "	24
* 1	2 x 4 - 20	" "hook strips	" " " " "	" " "	14
* 1	2 x 8 - 18	Window sills	" " " " "	"	24
* 3	1 x12 - 12	" frame	" " " " "	" " "	36
* 8	½ x1½ - 12	Stop	" " " " "	" " "	12
	Hardware				
*10	lbs. 60d.	Common Nails			
*15	" 40d.	" "			
*10	" 30d.	" "			
*75	" 20d.	" "			
*40	" 16d.	" "			
*160	" 10d.	" "			
*10	" 8d.	" "			
*15	" 6d.	" "			
* 9	pr. 10"	Heavy strap hinges with screws			
* 4	" 8"	" " " " "			
* 1	3½ x 3½	Loose pin butts with screws			
* 1		Knob rim latch, No. 4468 with #9241 knob			
*13	6"	Hooks and staples			
* 2	10"	Hasps for outside doors			
* 2	pr. 3"	Light strap hinges with screws for grain box			
* 1	6"	Hasp and staples for grain room door			

Hardware (Continued).

#43	lbs.	3d.	fine galvanized shingle nails.
#15	"	1¼"	barbed galvanized roofing nails for galvanized roofing.
# 7	"	No.8	Lead washers.
# 2			Outrigger pulley hangers.

Mill Order List.

* 5	2'6" x 3'0"	Double sash
* 1	2'8" x 6'8"	5 cross panel door

Paint.

*12	Gal.	Standard	gray wall paint.
* 1½	"	"	white trim "
*10	"	"	green roof "
# 2	"	Linseed Oil	
#1/2	"	Turpentine.	

Note:- If Laird & Sinclair Paint is used, deduct Oil and Turpentine, and add

1 Gal. Arotnrps to each 5 gallons of paint on order list.

PLAN NO. 2 - E

SPECIFICATIONS

BARN WITH CENTER DRIVEWAY
22'0" x 40'0"-14'Walls

This barn is designed for ranger stations which are centrally located, and to which and from which considerable hauling is done, and where grain or hay in large quantities are stored, and where to have a place under shelter to load and unload wagons is desired.

These specifications are intended to embrace all material necessary in the erection and completion of the building in all its parts, and to furnish such instructions as appear necessary to give the builder a general idea of the plan. Variations due to different locations and accessibility of lumber markets have been considered and estimates prepared accordingly.

The general plan as regards construction of frame and other vital parts of the structures is to be followed unless permission to deviate from the plans and specifications has first been secured from the District Forester. Deviations of minor consequence, however, to take care of unforeseen local conditions and circumstances may be made by the builder.

EXCAVATION.

Excavation for the foundation of the building shall be carried down to solid earth. The bottom of the excavation shall be level and smooth. When necessary to grade into unlevel ground for the purpose of providing a level building site, the slopes of the excavations resulting must clear the sides of the building by at least three feet. If necessary, provision should be made to prevent earth caving from the embankment from contacting with the sills. If foundation posts are of wood, they too should be protected.

FOUNDATION.

Do not place foundation blocks or underpinning farther apart than 7 feet on center. Where snow loads are excessive or the ground is not firm, place foundation blocks or underpinning on 4 foot center under all outside sills; on 6 foot centers on all exterior sills and girts. Where underpinning on short centers are necessary, add sufficient material to the lumber order list to provide for them.

Foundation blocks shall ordinarily be of large stones of sufficient thickness to raise the sills at least 6" above the ground. The sills should be placed directly on these stones. If stones of suitable sizes are not available, concrete or masonry blocks shall be provided. See Concrete Section of the Circular -- Foundations. A dry wall should be set up between foundation blocks under all outside sills. If the building site is not level and if to grade it level throughout is impracticable, foundations shall be either of -

(a).- 6" x 6" heart cedar, redwood or Douglas fir underpinning, set upon substantial flat stones of sufficient thickness to project at least 4 inches above the ground. Wood blocks should never be used for footings under foundation posts.

(b).- If substantial stones are not available, a masonry footing should be provided. For masonry use only hard stones preferably flat ones. All should be carefully imbedded on their broadest faces in mortar of 1 part cement and 2 parts coarse, clean, sharp sand. Each layer should be well filled and flushed up on both sides and firmly bonded together. The tops should be made level to receive the underpinning. See Table No. C-4.

MATERIALS

All structural materials should conform as closely as possible to the specifications given in the builder's list and lumber order list. That minor deviations must sometimes be made is recognized as unavoidable.

SILLS.

Should preferably be of cedar or redwood. Douglas fir may be used as a second choice.

Rectangular sills should be laid with the narrow face up.

Sills at corner should be halved together. When two or more pieces are necessary to form the total length of sill, a splice should be made on the foundation supports, as indicated on the plan.(See Cut No. B.M.-9.)

Two or more joints should not occur on the same line of foundation posts. Arrange to have the splices made over foundation posts of different sets.

FLOOR JOISTS, STUDDING, BRIDGING, ETC.

Floor joists should be of selected sticks, straight grain and free from all knots larger than 1 inch in diameter; 1st choice being Douglas fir, 2nd choice White fir, 3rd choice Yellow pine. Studding, headers, trimmers, plates, etc., may be of any straight grain material, free from loose knots and knots which materially weaken the stick. Lay floor joists directly upon the sills. Where two joists form the span, use the lap joint; in all cases, place the bow of the joists up.

The plan indicates the position of studding.

Headers over window openings and door openings should be double.

Place 2" x 4" girts between wall studding as shown in the plan.

Place one end of the upper floor joists on a 1" x 6" ribbon set one inch into the studding at the elevation shown in the plan. The outside of the ribbon should be flush with the edge of the studding. Spike the floor joists to the studding with 3 -20d. nails.

ROOF.

Material for roofs of different pitches is provided in the lists. Within the respective ranges of elevations stated, use the roof recommended. Exception to the above should occur only where snowfall is not a source of hazard as on the southern Forests and on the Modoc.

Rafters and other members of the roof frame should be of selected straight grain lumber; 1st choice Douglas fir, 2nd choice white fir, 3rd choice Yellow pine, free from knots and other imperfections. Too much attention can not be given to the selection of the best sticks of the lumber order for rafters.

Care should be taken to cut the rafters true in order that they rest firmly on the plate, meet squarely at the apex of the roof.

Rafters should be braced as shown in the plan. Dimensions of material for braces to be used will vary with the different types of roof.

Roof projections should be sheeted solid with 1" x 12" rough or dressed lumber.

Rafter ends should be finished in the manner illustrated by the diagram "Section".

Use for roof covering either -

(a)- Star A Star Red cedar or redwood shingles
(b)- Shakes of White fir or Sugar pine.
(c)- Galvanized iron (See B.M.Page 8.)

Lay shingles 4½" to weather on sheeting 8" on center. Nail them with 3d. fine galvanized shingle nails. Lay the bottom course of shingles double and project it 1½" beyond the sheeting. Allow a 1" projection of shingles over the barge board trim. Table No. B.M.-2 gives data on shakes. If shakes are used, allow 1½" projection at eaves and 1" projection over barge board trim.

The ridge of the roof should be finished with 1" x 6" excepting in cases where galvanized iron roofing is used. With it, use galvanized ridge capping.

SIDING.

Use 1" x 12" boards and 1" x 3" battens, free from loose knots and all knots of a greater diameter than 1½". Boards should also be free from weather check, rot, disfigurements and large pitch pockets. Finish the corners with 1" x 4" boards.

FLOORS.

Flooring in the stall section may or may not be used, at the option of the builder. Ordinarily, if drainage is good, it will be advisable not to install the floor. If not installed, items of flooring after which (¢) mark appears should be omitted from the order list. If flooring is used, lay it parallel to the driveway behind the stalls, and at right angles to it within the stalls--See Plan. Note the furring strip under stall floor to give proper drainage to the stall floors.

The floor of the grain room shall be double. The upper flooring shall be of 1" x 12" lumber with 5/8 x 3" battens under cracks.

STALLS, PARTITIONS, ETC.

Partitions on either side of wagon space should be finished in 1" x 12" boards; the doors are made of the same material.

The grain room may be lined with boards and battens. Care should be taken to put on the lining tight enough to prevent the entrance of rodents.

A detailed plan is given of the grain box in Detail No. 6-D. If desired, it may be placed on a support to provide more room under the mouth of the opening at the bottom.

Stalls shall be constructed as shown in the plan. If no flooring is used in the stalls, the stall end posts shall be set upon a stone at least 6" deep and 8" square. A plan for mangers of ordinary type is shown, but size and type of mangers may be varied to suit particular conditions and circumstances. In the event the plan shown for mangers is not used, the same substantial construction standard must be followed in all deviations. If flooring is not used, elevations of mangers may be lowered to obtain proper height for them.

Racks of the type popular in a given locality may be used if desired. Where loose hay is fed, racks are very appropriate. Sufficient material has been included in the list of extras to make the racks, if desired.

DOORS AND WINDOWS.

Make the rough doors, and door and window frames as shown in the plan. Order windows and door for grain room as specified.

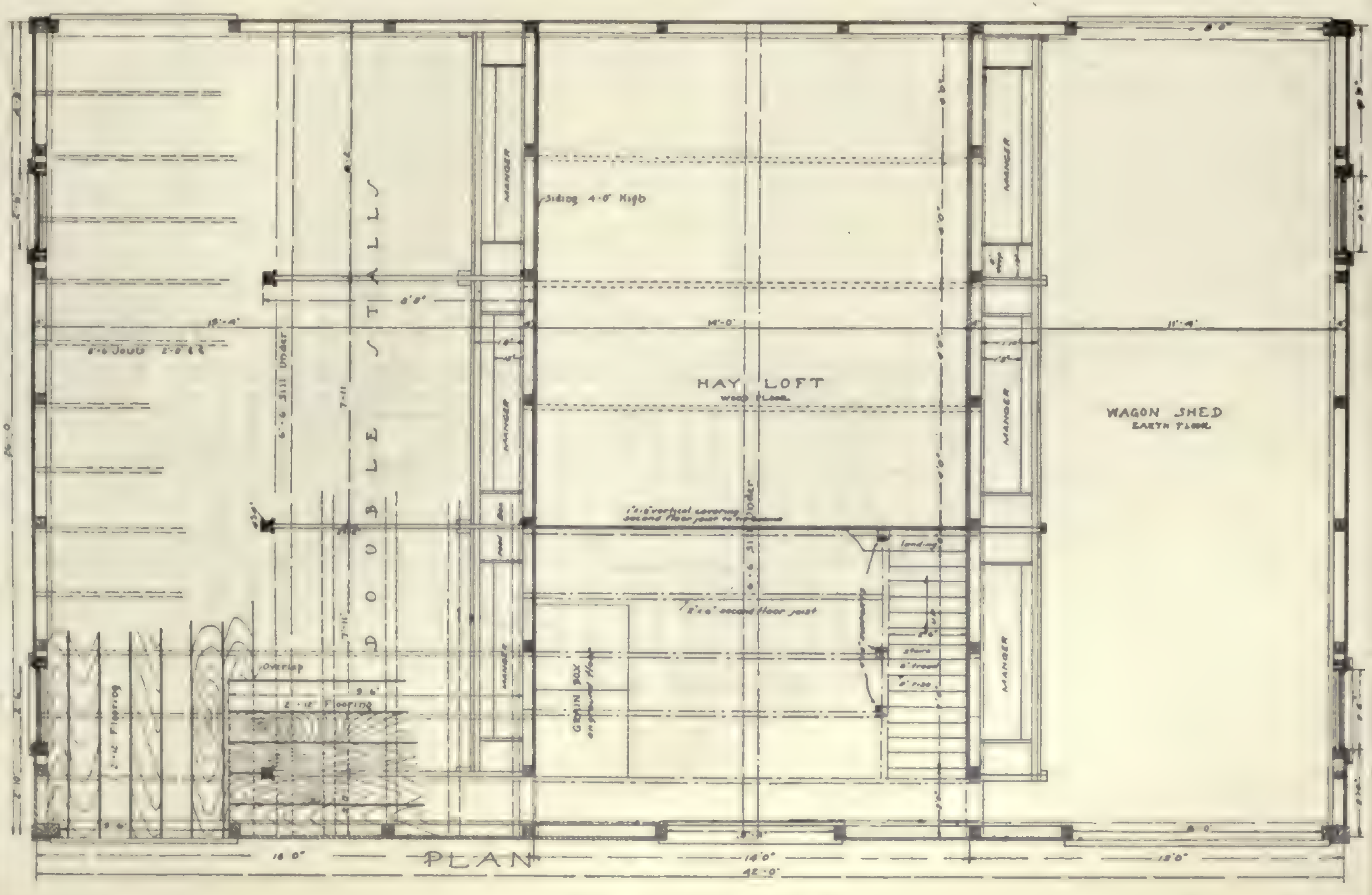
PAINTING.

Color - Body - Standard gray, 2 coats.
Roof " green, " "
Trim " white " "

If the structural material is dry, apply the first coat as soon as the siding and roof are placed. If the lumber and roofing are not dry, apply paint as soon as the condition of the lumber will permit. Put on the second coat as soon as the first coat is dry. Do not paint if lumber is not thoroughly dry or if the surface is damp from rains, fog, frost, etc. Do not paint during damp weather. See the Paint Section of the Circular.

PLAN NO 2 F
BARN & WAGON SHED ①

SCALE

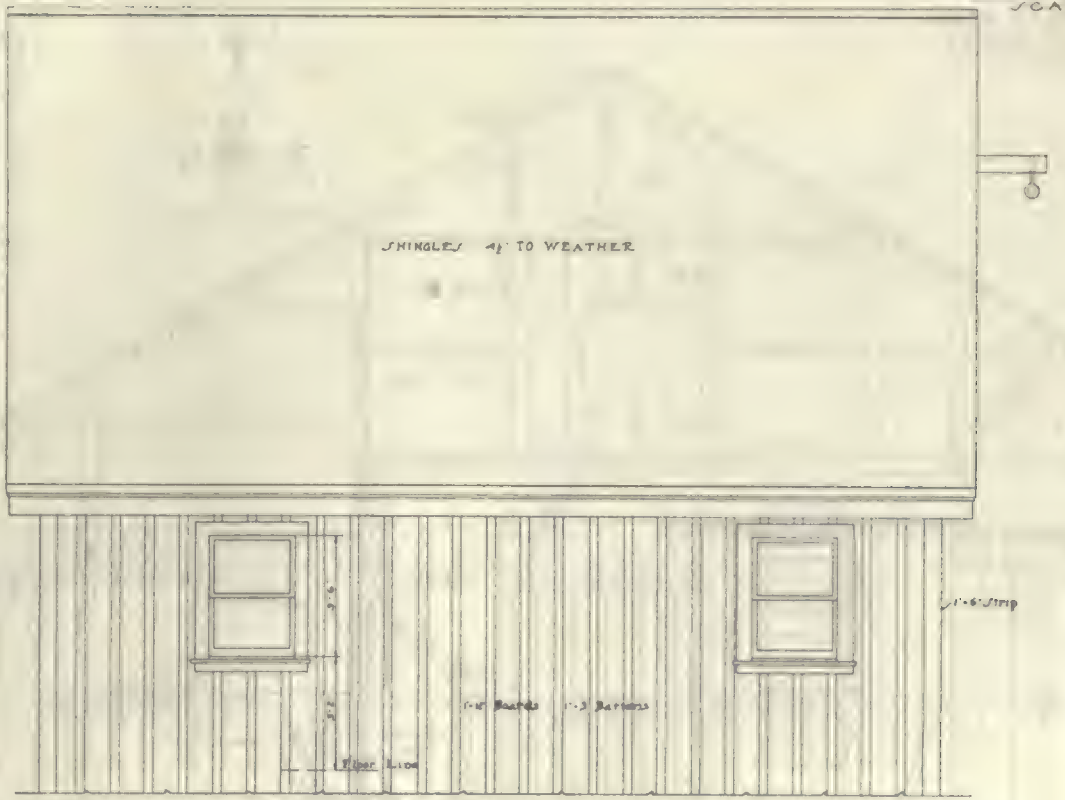


PLAN NO 2 F

BARN & WAGON SHED

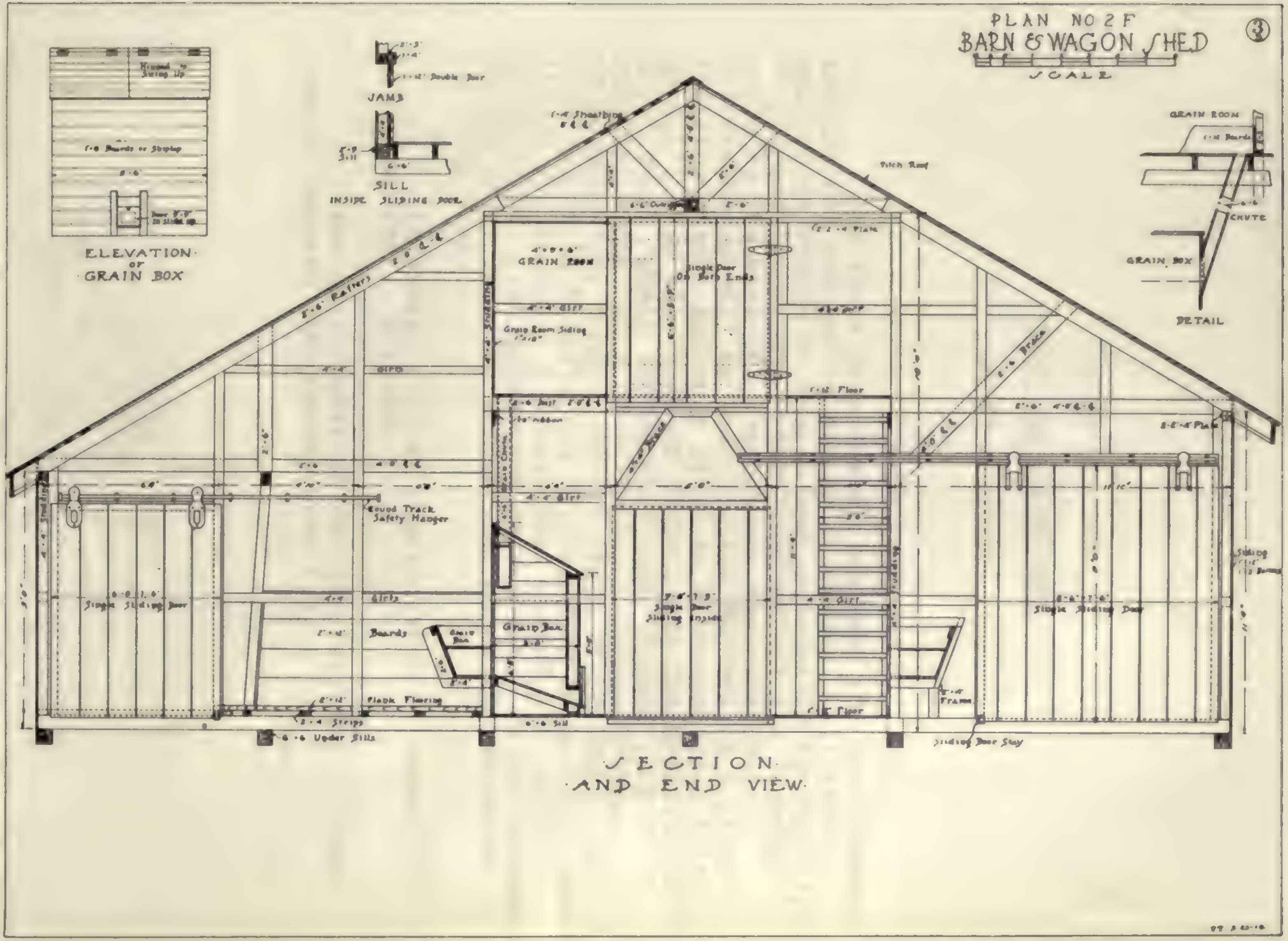
SCALE

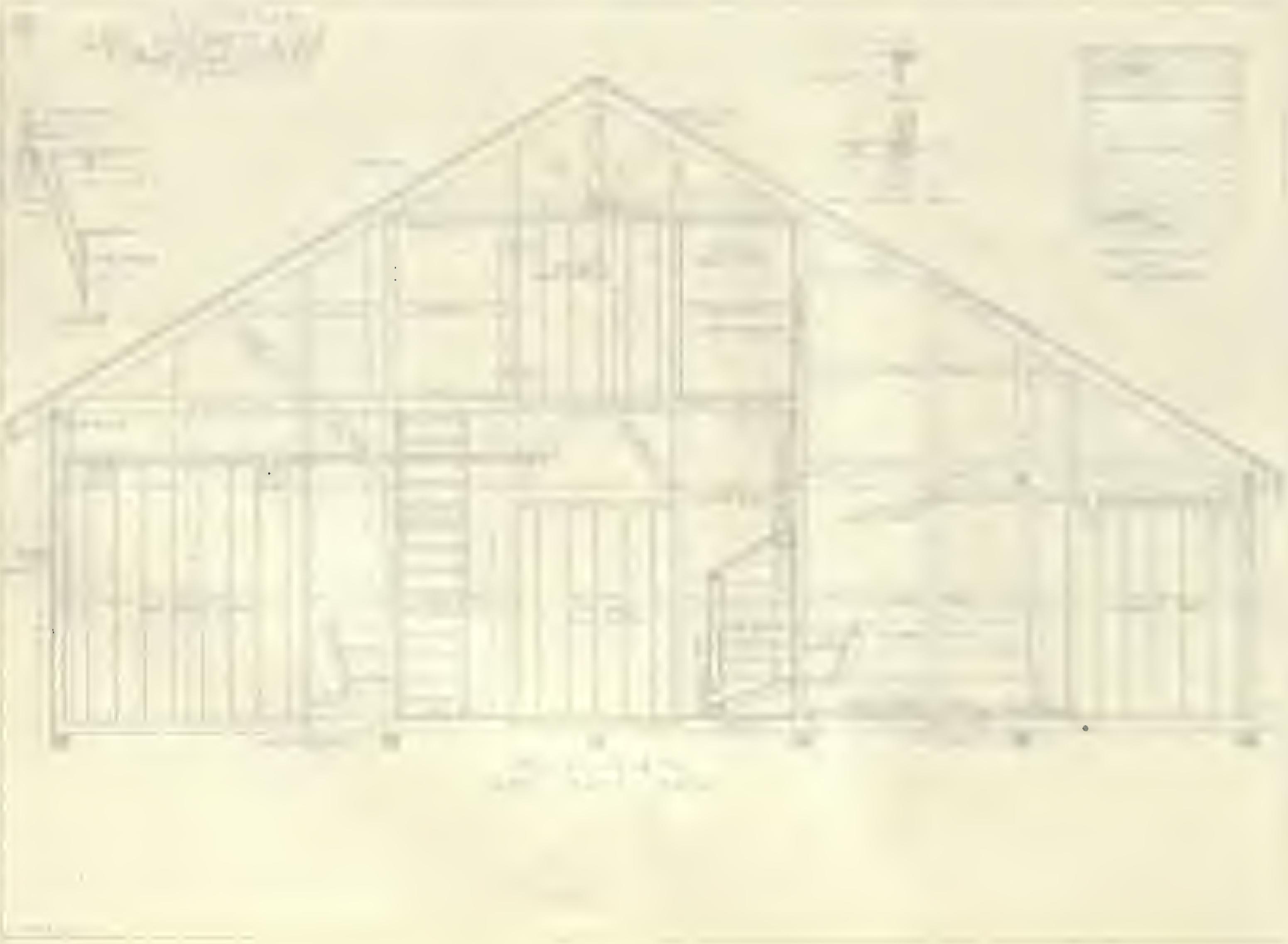
③



SIDE ELEVATION

VT 8 26-10


③
PLAN NO 2F
BARN & WAGON SHED
SCALE
ELEVATION OF GRAIN BOX
Hinged to Swing Up
1·8 Boards or Shiplap
Door 8·8 to Slide Up
JAMB
1·12 Double Door
SILL
INSIDE SLIDING DOOR
6·6
1·4 Sheathing S & E
8·6 Rafters
Pitch Roof
6·6 Outrigger
GRAIN ROOM
4·4 Girt
Grain Room Siding
Single Door On Both Ends
1·12 Floor
2·6 Joist
4·4 Studding
Round Track Safety Hanger
Single Sliding Door
4·4 Girts
2·12 Boards
Grain Box
2·12 Plank Flooring
2·4 Strips
6·6 Under Sills
6·6 Sill
Single Door Sliding Inside
2·6 Brace
Single Sliding Door
Siding
Frame
Sliding Door Stay
GRAIN ROOM
1·12 Boards
CHUTE
GRAIN BOX
DETAIL
SECTION AND END VIEW



PLAN NO. 2-F

BARN AND WAGON SHED

26'0" x 42'0"

The items preceded by the mark (*) are standard and are not subject to change or choice. All items subject to change or choice are preceded by the mark (#). To prepare a complete order list, select the items preceded by the mark (#) which under the particular circumstances will be best adapted for use at a given building site. Add such items to those preceded by the mark (*). To all items of lumber, add the specifications shown under "Grade and Species" and "Finish". For example: 2 pcs. 4" x 6" - 16' No. 1 Common Redwood, cedar or Douglas fir, rough. To all items of hardware, add only such descriptive matter as is necessary to describe each item. For example: 2 pounds 30d. common wire nails--3 pounds 3d. fine galvanized wire nails. Do not include on the order list the purpose for which the hardware is to be used.

Estimated cost of construction -- labor at $4.00 per day -- $160.00.

See specifications for adaptability of this barn as regards purpose and location.

BUILDER'S LIST OF MATERIALS.

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
		Underpinning and Sills.			
*10	6 x 6 - 16	Sills	(1st choice,No.2 Clear R.W.or (Heart cedar	Rough	480
* 5	6 x 6 - 20	"	(2nd " ,D.F.,R.F.,or W.F. (3rd " , Y.P.	"	300
	6 x 6	Underpinning	Heart cedar or redwood		

Note:- For item of "Underpinning" no amount is given. The actual amount needed will depend upon the slope of the ground of each particular building site. Make due allowance for this item in the lumber order. If split or round material is used, this item may be eliminated from the lumber list.

		Studding, Plates, Joists, etc.			
* 4	4 x 4 - 16	Plates	No. 1 Common, any species	Rough or	86
* 4	4 x 4 - 14	Studding	" " " " "	"sized	75
* 5	4 x 4 - 12	"	" " " " "	" "	80
*25	4 x 4 - 18	"	" " " " "	" "	600
*12	2 x 4 - 16	Girts	" " " " "	" "	126
* 4	2 x 4 - 20	"	" " " " "	" "	43
*12	2 x 4 - 16	"	" " " " "	" "	128
*13	2 x 6 - 14	Haymow joists	Same as sills	Rough	182
* 7	2 x 6 - 14	Granary Floor Joists	" " "	"	98
# 2	2 x 6 - 18	Sillssplices	No. 1 Common, any species	"or sized	36
* 6	2 x 6 - 16	Ceiling ties 4'O.C.	No. 2 Clear Douglas fir	Rough	96
* 6	2 x 6 - 14	" " " " "	" " " " "	"	84
* 6	2 x 6 - 18	Shed braces	" " " " "	"	108
* 6	2 x 6 - 12	Ceiling ties	" 1 Common, any species	"	72
* 5	2 x 6 - 12	Solid bridging	" " " " "	"	60
# 6	2 x 4 - 16	Extras	" " " " "	" "	64

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
		Studding, Plates, Joists, etc. (continued)			
# 6	1 x 8 - 16	Extras	No. 1 Common, any species	Rough or sized	64
#12	1 x12 - 16	"	" " " " "	" " "	192
		Sheeting, Floor, Walls, Etc.			
*375	Bd.Ft.1x12	Flooring,1st floor	" " " " "	Rough	375
*185	" " 1x12	" 2nd "	" " " " "	"	185
*26	1 x12 - 20	Siding side walls	" " " " "	"	520
*575	Lin. ft.1x3	Battens, floor	" " " " "	"	144
*16	1 x12 - 20	End Stall Side	" " " " "	"	320
*52	1 x12 - 12	End wagon and centers	" " " " "	"	624
*40	1 x12 - 16	Gable ends	" " " " "	"	640
*2000	Lin.Ft.	Battens,5/8 x 3	" " " " "	"	500
* 8	1 x 6 - 12	Corner Boards	" " " " "	"	48
* 6	1 x 6 - 16	Belt course	" " " " "	"	48
*425	Bd.Ft.1x12	Partitions	" " " " "	"	425
#13	2 x 6 - 16	Floor joists(stall section)	No.2 Clear Douglas fir	"	208
# 7	2 x12 - 12	Flooring " "	No. 1 Common, any species	"	168
# 7	2 x 12 - 14	" " "	" " " " "	"	196
#13	2 x 12- 18	" " "	" " " " "	"	468

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
Roof.					
*14	2 x 6 - 16	Rafters	No. 2 Clear Douglas fir	Rough	224
*14	2 x 6 - 20	"	" " " " "	"	280
*14	2 x 6 - 18	"	" " " " "	"	252
* 4	2 x 6 - 16	Barge boards, spliced	No. 1 Common, any species	"	72
* 2	2 x 6 - 20	" " "	" " " " "	"	40
* 6	1 x 6 - 16	Gable end frieze	" " " " "	"	48
* 4	1 x 6 - 12	Rafter end frieze	" " " " "	"	24
* 6	2 x 6 - 16	Collar beams	No. 2 Clear Douglas fir	"	96
* 6	2 x 6 - 14	Com. and king struts	" " " " "	"	84
* 1	6 x 6 - 8	Outrigger	" " " " "	"	24
* 8	1 x12 - 14	Rafter end sheeting	" 1 Common, any species	"	112
#730	Bd.Ft.1x4	Sheeting 8" O.C.	" 2 " " "	"	730
#13,500		Shingles, 4½" to weather	Star A Star, Red cedar		
# 4	1 x 6 - 16	Ridge board	No. 1 Common, any species	"	32

Or

If shakes are to be used, see Improvement Manual for amount of, and also amount of sheeting.

Or

#42	10'0"	Corrugated Galvanized iron roofing, 26 gauge.	
#28	8'0"	" " " " " "	
#14	10'0"	" " " " " "	
#210	Bd.Ft.1x6	Nailing strips	No.1 Common, any species
#30	Lin. Ft.	Ridge cap plain 26 gauge with 6' sides.	

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
		Manger and Stalls.			
*10	1 x12 - 16	Manger	No. 1 Common, any species	Rough	160
* 6	2 x 4 - 16	" frame	" " " " "	"	64
* 3	2 x 8 - 16	Tie pole	" " " " "	"	64
* 3	1 x 8 - 12	Feed boxes	" " " " "	"	24
* 2	1 x12 - 16	" "	" " " " "	"	32
* 5	2 x12 - 16	Stall partitions	" " " " "	"	160
* 2	4 x 4 - 18	" " frame	" " " " "	"	48
* 1	4 x 6 - 16	Beam support	" " " " "	"	32
* 1	4 x 6 - 12	" "	" " " " "	"	24
		Feed Rack (To be used at option of builder)			
# 4	2 x 4 - 12	Top and bottom rail	No. 1 Common, any species	Rough	32
# 2	2 x 4 - 16	Uprights	" " " " "	"	22
# 8	1 x 4 - 12	Slats	" " " " "	"	32
# 6	1 x 6 - 12	Finish and braces	" " " " "	"	36
		Grain Box.			
* 3	2 x 4 - 16	Frame	" " " " "	"	32
*14	1 x 8 - 16	Shiplap covering	"C"Grade California, any species, or No. 3 clear Oregon D.F.		150
		Doors and Windows.			
* 9	1 x 6 - 16	Door brace	No. 1 Common, any species	S1S	72
* 2	1 x 8 - 18	Track strip	No. 2 clear, any species	"	24
* 3	1 x 8 - 12	" "	" " " " "	"	24
* 1	2 x 8 - 16	Window sill	No. 1 Common, any species	"	22
* 4	1 x12 - 16	" frames	" " " " "	"	64
* 5	½ x1½ - 12	Stops for window and door	" " " "	Rough	8

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
	Stairs.				
* 2	2 x12 - 14	Stair horses	No. 1 Common, any species	Rough	56
* 2	2 x 6 - 18	" treads	" " " " "	"	36
	Mill Order List.				
* 4	2'6" x 3'6"	Windows			
* 1	2'6" x 6'0"	Door, 5 cross panel for grain room			
	Hardware List.				
*15 lbs.	40d.	Nails, Common			
*20 "	30d.	" "			
*75 "	20d.	" "			
*50 "	16d.	" "			
*200 "	10d.	" "			
*10 "	8d.	" "			
*15 "	6d.	" "			
#18 "	No.9,2"	" , Galvanized roofing			
#10 "	" 8	Lead washers.			
* 2 pr.	10"	Heavy strap hinges with screws			
* 2 sets		Barn door hangers and 16'0" of track			
* 3 "		" " " " 10'0" " "			
* 7		6" hooks and staples			
* 2 pr.		3" light strap hinges and screws for grain box			

Paint.

*14 Gal. Regulation outside gray paint.
*1½ " " trim white "
*12 " " roof green "
3 " Linseed Oil
½ " Turpentine

Note:- If Laird & Sinclair paint is used, omit Linseed Oil and Turpentine, and add

# 1 Gal. Aroturps to each 5 gallons of paint on list.

SPECIFICATIONS

FOR

BARN AND WAGON SHED

26'0" x 42' 0"

This barn is designed especially for use where loose hay is fed, and where need prevails for the accommodation of a large number of horses.

If baled hay is fed, the space in the hay mow will be larger than needed. The surplus space may be utilized to good advantage by installing an upper floor at a hight of 12 feet. This may be done by setting a ribbon of 1" x 6" material into the studding at a point 11 feet above the floor, lower the ceiling joists on two foot centers to this ribbon. They will serve as upper floor joists upon which 1" x 12" flooring with 5/8" x 3" battens under the cracks may be placed. The grain room may be partitioned off on this floor and the remaining space used for a store room. In case the upper floor is installed, the roof must be securely braced with 2" x 6" collar beams and 2" x 6" struts placed about 6'2" above the upper floor level.

This barn is not adapted to regions of heavy snowfall. In the Sierra Forests, it should not be built at elevations over 3500 feet, or where the snowfall exceeds four feet of ordinary light snow, two feet snow well settled, or water-soaked snow.

These specifications are intended to embrace all material necessary in the erection and completion of the building in all its parts, and to furnish such instructions as appear necessary to give the builder a general idea of the plan. Variations due to different locations and accessibility of lumber markets have been considered and estimates prepared accordingly.

The general plan as regards construction of frame and other vital parts of the structures is to be followed unless permission to deviate from the plans and specifications has first been secured from the District Forester. Deviations of minor consequence, however, to take care of unforeseen local conditions and circumstances may be made by the builder.

EXCAVATION.

Excavation for the foundation of the building shall be carried down to solid earth. If practicable to do so, the bottom of the excavation shall be level and smooth. When necessary to grade into a slope for the purpose of providing level ground upon which to place the building, the embankment resulting must clear the sides of the building by at least three feet and provision should be made to prevent earth which may subsequently become loosened from contacting with the sills, and the foundation posts, if of wood.

FOUNDATION.

Do not place foundation blocks or underpinning further apart than 7 feet on center. Where snow loads are excessive, or the ground is not firm, place foundation blocks or underpinning on 4 foot center under all outside sills; on 6 foot centers under all exterior sills and girts. Where underpinning on short centers are necessary, add sufficient material to the lumber order list to provide for them.

Foundation blocks, if the building site is level, should ordinarily be of large stones of sufficient thickness to raise the sill at least 6" above the ground. The sill should be placed directly upon these stones. If suitable stones are not available, concrete or masonry blocks may be provided--see Concrete section of the Circular-Foundations. A dry wall should be set up between foundation blocks under all outside sills. If the building site is not level, and it is impracticable to make it level, foundations should be either of -

(a).- 6" x 6" heart cedar, redwood or Douglas fir underpinning, set upon substantial flat stones of sufficient thickness to project at least 4 inches above the ground. Wood blocks should never be used for footings under foundation posts.

(b).- If substantial stones are not available, a masonry footing should be provided. For masonry use only hard stones perferably flat ones. All should be carefully imbedded on their broadest faces in mortar of 1 part cement and two parts coarse, clean, sharp sand. Each layer should be well filled and flushed up on both sides and firmly bonded together. The tops should be made level to receive the underpinning. See Table No. C-4.

MATERIALS

All structural materials should conform as closely as possible to the specifications given in the builder's list and lumber order list. That minor deviations must sometimes be made is recognized as unavoidable.

SILLS.

Should preferably be of cedar or redwood. Douglas fir may be used as a second choice.

Rectangular sills should be laid with the narrow face up.

Sills at corner should be halved together. When two or more pieces are necessary to form the total length of sill, a splice should be made on the foundation supports, as indicated on the plan (See Cut No.B.M.-9)

Two or more joints should not occur on the same line of foundation posts. Arrange to have the splices made over foundation posts of different sets.

FLOOR JOISTS, STUDDING, BRIDGING, ETC.

Floor joists should be of selected sticks, straight grain and free from all knots larger than 1 inch in diameter; 1st choice being Douglas fir, 2nd choice white fir, 3rd choice Yellow pine. Studding, headers, trimmers, plates, etc., may be of any straight grain material free from loose knots and knots which materially weaken the stick. Lay floor joists directly upon the sills. Where two joists form the span, use the lap joint; in all cases place the bow of the joists up. Place solid 2" x 6" bridging at the ends of each joist.

The plan indicates the method of placing studding.

Headers over window openings and door openings should be double.

Girts should be placed horizontally between studding as indicated in the plan.

Place ceiling joists directly over plates. Nail them securely to the rafters and toe nail them to the plate. If the building will be subject to snow loa for ceiling joists, give particular care to the selection of good straight grain sticks free from knots larger than 1 inch in diameter, and other imperfections that would weaken the stick. Use five 20d. wire nails for nailing the ceiling joist to the rafters and two 20d. wire nails to toe nail them to the plate.

ROOF.

Rafters and other members of the roof frame should be of selected straight grain lumber; 1st choice Douglas fir, 2nd choice white fir, 3rd choice yellow pine, free from knots and other imperfections. Too much attention cannot be given to the selection of the best sticks of the lumber order for rafters.

Care should be taken to cut the rafters true in order that they rest firmly on the plate and meet squarely at the apex of the roof.

Roof trusses should be well nailed with 10d. nails in 1" members and 20d. nails in 2" members. Do not over-nail. Five nails in surface 6" x 6" are enough.

Roof projections should be sheeted solid with 1" x 12" rough or dressed lumber.

Rafter ends should be finished in the manner illustrated by the diagram "Section".

Use for roof covering either -

(a).- Star A Star red cedar or redwood shingles.
(b).- Shakes of white fir or sugar pine.
(c).- Galvanized iron (See B.M. Page 8)

Lay shingles 4½" to weather on sheeting 8" on center. Nail them with 3d. fine galvanized shingle nails. Lay the bottom course of shingles double and project it 1½" beyond the sheeting. Allow a 1" projection of shingles over the barge board trim. Table No. B.M.-2 gives data on shakes. If shakes are used, allow 1½" projection at eaves, and 1" projection over barge board trim.

The ridge of the roof should be finished with 1" x 6", excepting in cases where galvanized iron roofing is used. With it, use galvanized ridge capping.

SIDING.

Use 1" x 12" boards and 1" x 3" battens, free from loose knots and all knots of a greater diameter than 1½".Boards should also be free from weather check, rot, disfigurements and large pitch pockets. Finish the corners with 1" x 4" boards.

FLOOR.

Flooring in the stall section may or may not be used, at the option of the builder. Ordinarily, if drainage is good, and if the building site is level, flooring will not be needed. If not used, the four items of the lumber list under Sheeting, Flour, Walls, etc. before which the mark (#) appears, should be omitted from the order list. If flooring is used, it should be laid lengthwise of the stall, and in the opposite direction behind the stalls. The wagon shed is not to have a floor. In every case, flooring should be provided in the hay mow section. Battens should be placed under cracks of hay mow floor and under floor of the grain room.

STALLS, PARTITIONS, ETC.

Stalls, grain room and other partitioned features should be constructed as shown in the plan. If no floor is used, set the mangers and posts upon a stone at least 6" thick and 8" square. Size and type of mangers may be varied to suit peculiar conditions and circumstances. If the plan shown is not followed, the same substantial construction standard must be adhered to in all deviations. If no floor is used, lower the manger to proper height to make allowance for elevation lost on account of absence of the floor.

Partitions between hay room and stall section shall extend only to top of manger, or if racks are used, a point about half way to the top of the racks.

Racks of the type popular in a given locality may be used, if desired. Where loose hay is fed, racks are usually appropriate.

If a grain box is needed, follow the plan shown in Detail No. 6-D.

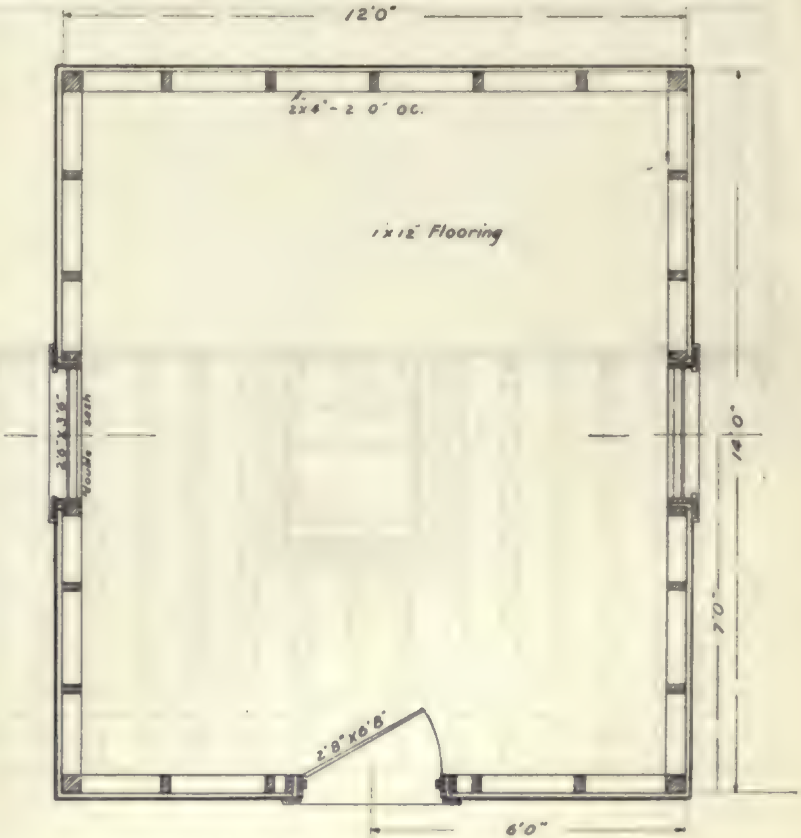
DOOR AND WINDOW FRAMES.

The builder may follow his personal opinion as regards the size of door, and position of doors and windows. If deviations from the plan in this respect are made, the construction standards shown in the plan must be followed.

PAINTING.

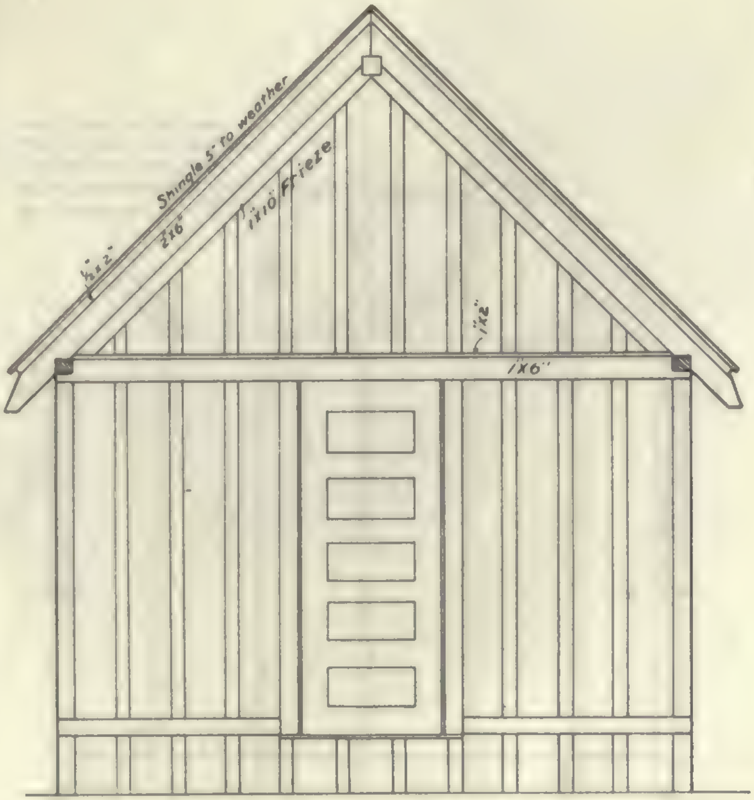
Color - Body - Standard gray, 2 coats
Roof - " green, 2 "
Trim - " white, 2 "

If the structural material is dry, apply the first coat as soon as the siding and roof are placed. If the lumber and roofing are not dry, apply paint as soon as the condition of the lumber will permit. Put on the second coat as soon as the first coat is dry. Do not paint if lumber is not thoroughly dry or if the surface is damp from rains, fog, frost, etc. Do not paint during damp weather. See the Paint Section of the Circular.

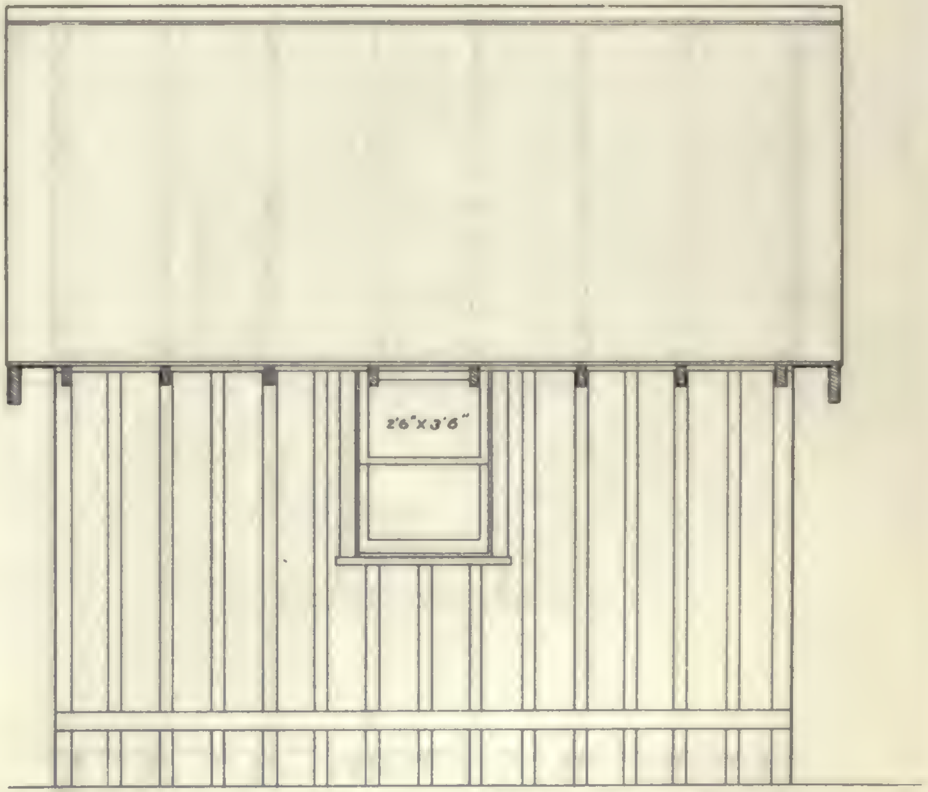


FLOOR PLAN

PLAN NO. 3-B.
TOOL HOUSE
US FOREST SERVICE
Scale

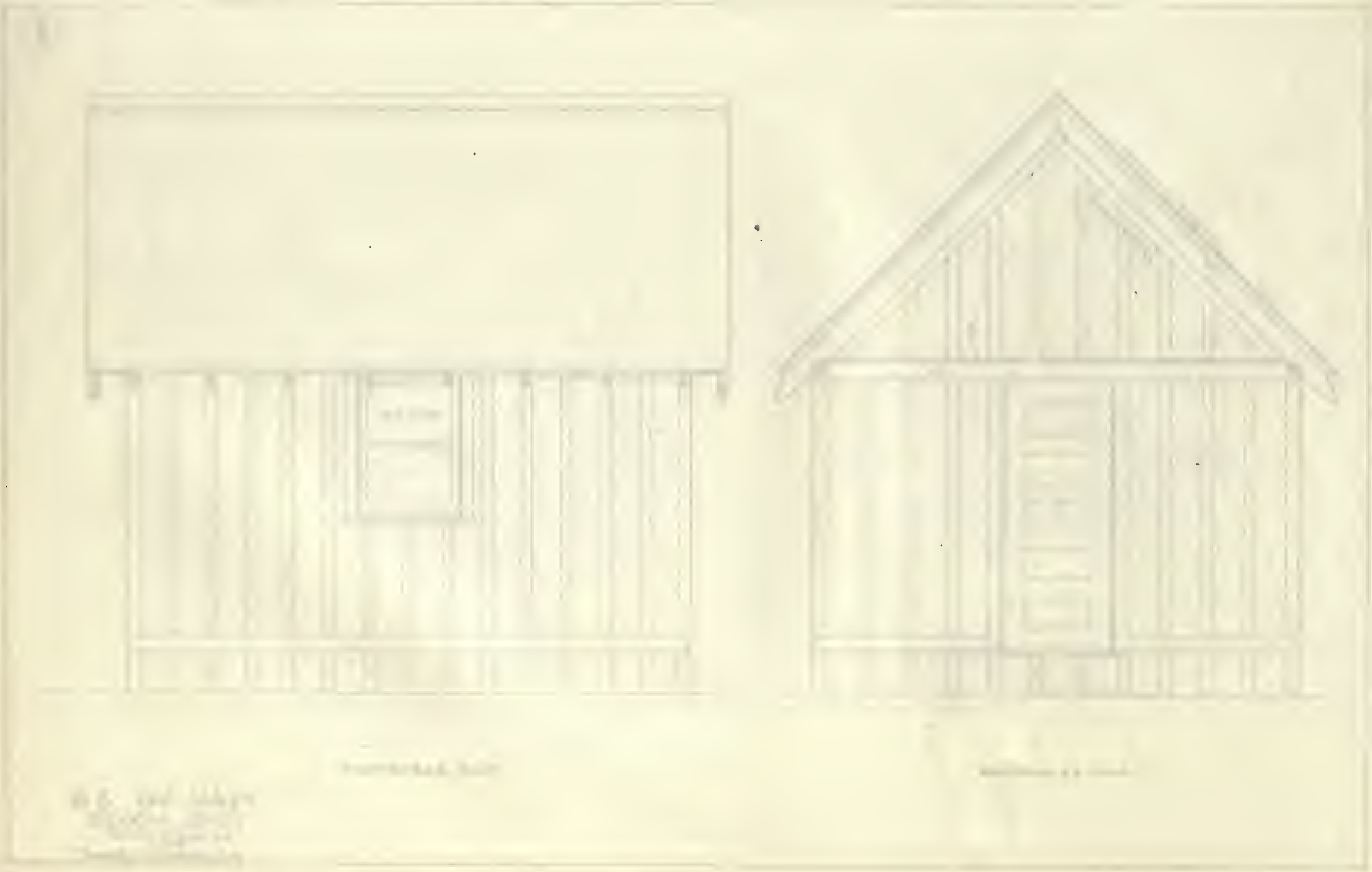


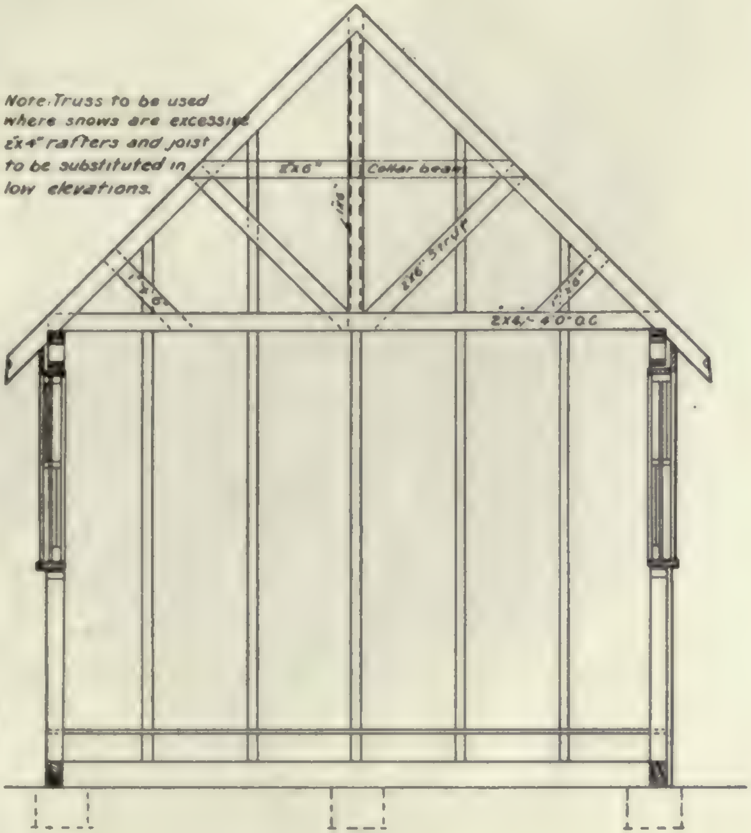
END ELEVATION



SIDE ELEVATION

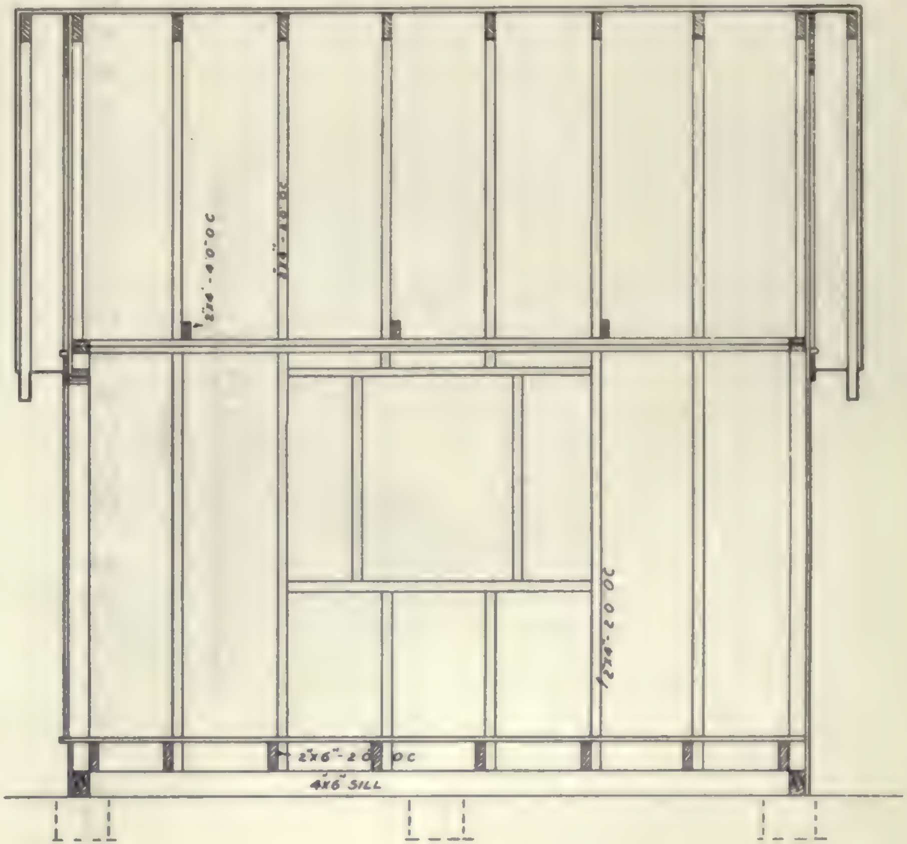
PLAN NO. 3 B.
TOOL HOUSE
U S FOREST SERVICE
Scale





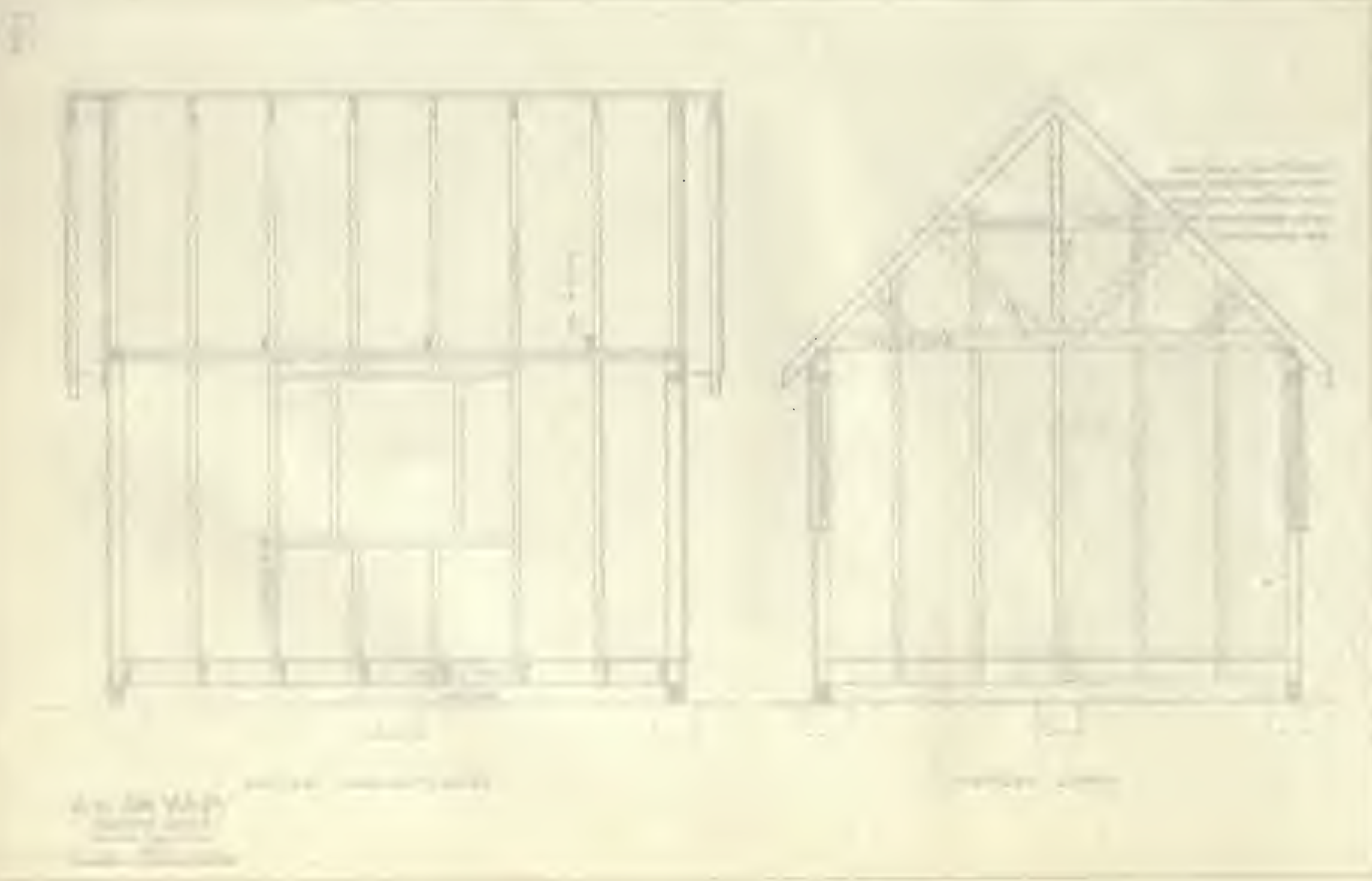
Note: Truss to be used where snows are excessive 2x4" rafters and joist to be substituted in low elevations.

CROSS SECTION



LONGITUDINAL SECTION

PLAN NO. 3-B.
TOOL HOUSE
U S FOREST SERVICE
Scale



SPECIFICATIONS

FOR

GENERAL SERVICE BUILDINGS

SPECIFICATIONS

FOR

GENERAL SERVICE BUILDINGS

PLAN NO. 3-B

8' x 8' - 8' Walls
1/2 Pitch Roof

12' x 12' - 8' Walls
1/2 Pitch Roof

12' x 14' - 8' Walls
1/2 Pitch Roof

14' x 16' - 8' Walls
1/2 Pitch Roof

Plan No. 3-B is illustrative of the type of construction for the buildings of the sizes above tabulated. To reduce volume of cuts and time the one plan only was prepared. It will serve as a guide to the builder.

These specifications are intended to embrace all material necessary in the erection and completion of the building in all its parts, and to furnish such instructions as appear necessary to give the builder a general idea of the plan. Variations due to different locations and accessibility of lumber markets have been considered and estimates prepared.

The general plan as regards construction of frame and other vital parts of the structures is to be followed unless permission to deviate from the plans and specifications has first been secured from the District Forester. Deviations of minor consequence, however, to take care of unforeseen local conditions and circumstances may be made by the builder.

EXCAVATION.

Excavation for the foundation of the building shall be carried down to solid earth. The bottom of the excavation shall be level and smooth. When necessary to grade into unlevel ground for the purpose of providing a level building site, the slopes of the excavations resulting must clear the sides of the building by at least 3 feet. If necessary, provision should be made to prevent earth caving from the embankment from contacting with the sills. If foundation posts are of wood, they too should be protected.

FOUNDATION.

Do not place foundation blocks or underpinning further apart than 7 feet on center. Where snow loads are excessive or the ground is not firm, place foundation blocks or underpinning on 4 foot center under all outside sills, on 6 foot centers under all exterior sills and girts. Where underpinning on short centers are necessary, add sufficient material to the lumber order list to provide for them.

Foundations should be either of -

(a) 6" x 6" heart cedar, redwood or Douglas fir underpinning, set upon substantial flat stones of sufficient thickness to project at least 4 inches above the ground. Wood blocks should never be used for footings under foundation posts.

(b) If substantial stones are not available, a masonry footing should be provided. For masonry use only hard stones, preferably flat ones. All should be carefully imbedded on their broadest faces in mortar of 1 part cement and 2 parts coarse, clean, sharp sand. Each layer should be well filled and flushed up on both sides and firmly bonded together. The tops should be made level to receive the underpinning. See Table No. C-4.

(c) Large stones of sufficient thickness to raise the sill to a height of at least 12 inches above the ground.

(d) Blocks of masonry or concrete at least 12 inches high, 10 inches wide on top and 16 inches square at the bottom. The top of concrete and masonry blocks should be made level to receive the sills. See Concrete Section and Table No. C-4.

MATERIALS.

All structural materials should conform as closely as possible to the specifications given in the builder's list and lumber order list. That minor deviations must sometimes be made is recognized as unavoidable.

SILLS.

Should preferably be of cedar or redwood. Douglas fir may be used as a second choice.

Rectangular sills should be laid with the narrow face up.

Sills at corner should be halved together. When two or more pieces are necessary to form the total length of sill a splice should be made on the foundation supports, as indicated on the plan (see Cut No. B.M.-9).

Two or more joints should not occur on the same line of foundation posts. Arrange to have the splices made over foundation posts of different sets.

FLOOR JOISTS, STUDDING, BRIDGING, ETC.

Floor joists should be of selected sticks, straight grain and free from all knots larger than 1 inch in diameter; first choice being Douglas fir, second choice white fir, third choice yellow pine. Studding, headers, trimmers, plates, etc., may be of any straight grain material free from loose knots and knots which materially weaken the stick. Lay floor joists directly upon the sills. Where two joists form the span, use the lap joint; in all cases place the bow of the joists up. Place solid 2" x 6" bridging at the ends of each joist.

Corner studs should be 3 - 2" x 4" spiked together. The plan indicates methods of placing studs.

Headers over window openings and door openings should be double. If shingle siding is used double trimmers also.

Wall girts of 2" x 4" scantling should be placed horizontally in all outside walls midway between the top and bottom plates. If water table is used a girt should be placed just below table to give nailing foundation for siding under water table. In such cases the wall girt should be placed midway between the water table and top plate.

Place ceiling joists directly over plates. Nail them securely to the rafters and toe nail them to the plate. If the building will be subject to snow load for ceiling joists, give particular care to the selection of good straight grain sticks free from knots larger than 1 inch in diameter and other imperfections that would weaken the stick. Use 5 - 20d. wire nails for nailing the ceiling joist to the rafters and 2 - 20d. wire nails to toe nail them to the plate.

ROOF.

Materials for roofs of different pitches are provided. At elevations within the respective ranges use the roofs of stated pitches. Exception to the above should occur only where snowfall is not a source of hazard as on some of the southern Forests and on the Modoc,

Where roof trusses are used fasten the members securely with 10d. nails in members 1 inch thick and with 20d. nails in members 2 inches thick.

Rafters and other members of the roof frams should be of selected straight grain lumber; first choice Douglas fir, second choice white fir, third choice yellow pine, free from knots and other imperfections. Too much attention cannot be given to the selection of the best sticks of the lumber order for rafters.

Care should be taken to cut the rafters true in order that they rest firmly on the plate, meet squarely at the apex of the roof.

Eave projections should be sheeted solid with 1" x 12" rough lumber.

Rafter ends should be finished in the manner illustrated by the diagram "Section".

Use for roof covering either -

(1) Star A Star red cedar or redwood shingles.

(2) Shakes of white fir or sugar pine.

(3) Galvanized iron (see B.M. Page 8)

(4) Lay shingles 4½ inches to weather on sheeting 8 inches on center. Nail them with 3d. fine galvanized shingle nails. Lay the bottom course of shingles double and project it 1½ inches beyond the sheeting. Allow a 1 inch projection of shingles over the barge board trim. Table No. B.M.-2 gives data on shakes. If shakes are used allow 1½ inches projection at eaves and 1 inch projection over barge board trim.

The ridge of the roof should be finished with 1" x 6" excepting in cases where galvanized iron roofing is used. With it, use galvanized ridge capping.

SIDING.

As available and as circumstances might dictate the builder may choose any style included in the following list:

(a) Rough lumber 1" x 12" and 1" x 3" battens placed vertically. Material should be free of loose knots and all knots of a diameter greater than 1½ inches and free from weather check, rot disfigurements and large pitch pockets that naturally affect the soundness of the stick. Nail the board securely to the sills, girts, plates and studs with 3 - 10d. nails at each member named. Fasten battens with 6d. wire nails placing 2 at each end and 1 on each side of the battens approximately 18 inches apart throughout the length of the batten. Clinch on the inside all projecting nails. This style of siding shall be placed as shown on the plan.

(b) 1" x 8" siding of same specifications as (a) laid horizontally with a lap of 2 inches. Set the first board at the bottom on a 1" x 2" strip nailed to studs. Exercise care in spacing the siding in order that the lap will be equal on each board. Nail siding at top and bottom at each stud with a 10d. wire nail.

(c) Rustic drop or bevel siding of C Grade California material or 3 Grade Oregon. Nail siding with 2 - 8d. wire nails at each stud.

(d) Star A Star red cedar shingles placed 5 inches to weather on 1" x 4" sheeting on 8 inch centers. Nail shingles with 3d. fine galvanized nails.

B - C and D siding shall be placed as shown on Plans 1-A and 1-B

In placing sheeting for shingle walls cut back the sheeting the width of the door and window casing. Before placing sheeting study the Detail 6D. showing door and window frames where shingles are used.

BRACKETS AND BARGE BOARDS, OUTSIDE TRIM.

Place brackets, barge boards and belt courses as shown on plan. Place soffit under gable projection.

INSIDE FINISH.

Inside finish is not intended.

FLOOR.

Floors may or may not be desired. If not needed omit from the order list flooring and 2" x 6" floor joists. The choice of two kinds of floor is given - 1" x 12" rough with 5/8" x 3"or 1" x 4" under cracks; or 1" x 4" Vertical Grade Douglas fir milled flooring. The purpose for which the building will be used will dictate kind of flooring to select.

FLUES.

If the purpose of the building will require a stove, install a flue as per Detail No. 6A and 6B. Use 6B where snowfall is heavy. Material for flues has not been included in the material list.

DOOR AND WINDOWS.

Order doors and windows of the dimensions shown on the plan or as shown on Detail 6D. Flash over the window and door with 4 inch No. 30 galvanized iron strips. Where 1" x 8" rough siding is used, set the casing directly over the siding. Fill holes by notching 1" x 2½" strips along side of the casing.

PAINTING.

Color - Body - Standard gray, 2 coats
Roof - " green 2 "
Trim - " white 2 "

If the structural material is dry apply the first coat as soon as the siding and roof are placed. If the lumber and roofing are not dry, apply paint as soon as the condition of the lumber will permit. Put on the second coat as soon as the first coat is dry. Do not paint if lumber is not thoroughly dry or if the surface is damp from rains, fog, frost, etc. Do not paint during damp weather. See the Paint Section of the Circular.

SERIES NO. 3

GENERALL SERVICE BUILDING

PLAN NO. 3-B. BUILDING
8'0" x 8'0" - 8' Walls
1/2 Pitch Roof

PLAN NO. 3-B

GENERAL SERVICE BUILDING

8'0" x 8'0" - 8'Walls
1/2 Pitch Roof

This building is designed for general utility purposes, i.e., tool house, store house, small shelter house, well house, woodshed, etc. Minor changes in position of door, omission of floor and other similar changes may be necessary to meet particular needs. For the building as designed, items preceded by the mark (*) are standard and are not subject to change or choice. Purpose of the building, condition of local lumber markets and isolation of certain building sites from markets carrying a varied stock of lumber are factors which will govern selection of the type of outside wall cover, kind of flooring, kind of roofing, specification of rafters, and sizes and kinds of nails. All items subject to change or choice are indicated by the mark (#). To prepare a complete order list, select the items marked (#) which, under the particular circumstances, will be best adapted for use at a given building site. Add such items to those marked (*). To all items of lumber, add the specifications shown under "Grade and Species" and "Finish". For example: two pieces 4" x 6" - 16' No. 1 Common Redwood, cedar, Douglas fir or pine, rough. To all items of hardware, add only such descriptive matter as is necessary to adequately describe each item. For example: 2 pounds 30d common wire nails - 3 pounds 3d fine galvanized wire nails. Do not show on the order list the purpose for which the hardware items are to be used.

Estimated cost of construction - labor at $4.00 per day -- $30.00.

BUILDER'S LIST OF MATERIALS

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
	Sills.				
* 2	4 x 6 - 16	Sills	(1st choice, R.W.or Heart Cedar (2nd " , D.F.,W.F. or R.F. (3rd " , Y.P.	Rough	64
*	6 x 6	Underpinning	Redwood or Heart Cedar		

For item of "Underpinning" no amount is given. The actual amount needed will depend upon the slope of the ground of each particular building site. Make due allowance for this item in the lumber order. If split or round material is used, this item may be eliminated from the lumber list.

	Studs, plates, joists, etc.				
* 8	2 x 4 - 16	Studding	No. 1 common, any species	Rough	86
* 4	2 x 4 - 16	Plates	" " " " "	"	43
* 3	2 x 4 - 16	Girts and trimmers	" " " " "	"	32
* 3	2 x 6 - 16	Floor joists	" " " " "	"	48
* 2	2 x 6 - 16	Bridging	" " " " "	"	32
	Flooring.				
# 4	1 x12 - 16	Flooring	" " " " "	"	64
#64	Lin. Ft.1 x 3	" battens	" " " " "	"	16
#80	Bd. Ft.1 x 4	" , T. & G.	"C" Grade California, any species, or No. 2 clear Oregon D.F.		80

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
Outside Wall Cover.					
Style (a).					
#16	1 x12 - 18	Walls	No. 1 Common, any species	Rough	288
# 3	1 x12 - 16	Gables	" " " " "	"	48
300	lin.ft.1x3	Battens	" " " " "	"	75
Style (b).					
#220	Bd.Ft. 8"	Siding, laid horizontally 6" to weather	" " " " "	"	220
#125	lin.ft.1x3	Battens	" " " " "	"	32
# 8	1 x12 - 16	Base	" " " " "	"	128
* 2	1 x 4 - 16	Water table	" " " " "	" or S1S	11
* 2	1 x 4 - 16	Belt course	" " " " "	" " "	11
* 2	1 x 6 - 16	Belt course	" " " " "	" " "	16
* 4	1 x 4 - 18	Corner boards	" " " " "	" " "	24
* 1	4 x 4 - 8	Brackets	" " " " "	" " "	11
Style (c).					
#375	Bd.Ft.8"	Rustic or drop siding	"C"Grade California ,any species, or No. 3 clear Oregon D.F.		375
Style (d).					
#2500		Shingles, 5" to weather	Star A Star, Red cedar		
# 160	Bd.Ft.	Sheeting, 1" x 4"	No.2 Common, any species	"	160

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
		Roof Frame.(16" eaves and gable projection)			
# 5	2 x 4 - 14	Rafters (light snow load)	(No.2 clear D.F.,1st choice (" " " W.F.,2nd " (" " " Y.P.,3rd "	Rough	47
# 5	2 x 6 - 14	" (heavy snow load)	Same as above		
* 2	1 x 6 - 16	Ceiling Joist	" " "		16
* 2	2 x 6 - 14	Barge boards	No.1 common, any species	" or S4S	28
* 2	1 x 2 - 14	" trim	" " " " "	" " "	5
* 2	1 x 8 - 12	Gable end frieze	" " " " "	" " S1S	16
* 1	1 x 4 - 16	Rafter end frieze	" " " " "	" " "	6
* 2	1 x12 - 12	Soffit	" " " " "	" " "	24
* 1	1 x 6 - 12	Collar beams	" " " " "	"	6
	ROOF COVER				
* 2	1 x12 - 12	Rafter end sheeting	" " " " "	" or S1S	24
*	1 x 4	Sheeting 8" O.C.	" 2 " " "	"	60
* 2	1 x 8 - 12	Ridge Boards	" 1 " " "	"	16
#1250		Shingles, $4\frac{1}{2}$" to weather	Star A Star, Red Cedar		

or

If shakes are to be used, see "Shake Table" for amount of materials.

or

#11		26 Gauge Corrugated Galvanized Iron			
#11	Lin. ft.	26 Gauge plain galv. ridge capping, 6" sides.			

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
		Doors and Windows(frames):			
* 1	2 x 8 - 8	Sills	No. 2 Clear, any species	Rough or S1S	11
* 2	1 x 6 -18	Door frame	" " " " "	" " "	18
* 1	1 x12 -12	Window frame	" " " " "	" " "	12
* 2	½ x1½ -12	Door and window stops	" " " " "	" " "	3
		Mill Order List (Door and Window)			
* 1	2'8" x 6'8" x 1½"	Colonial five-panel door (See Cut No. B.M.-3			
* 1	2'6" x 3'6" x 1½"	Two-light Window, 21-oz. glass			
		Hardware Order List.			
*10	Ft. 4" 30 gauge	Galvanized Iron Flashing			
*10	Lbs. 10d	Nails, common wire for frame			
* 8	" 20d	" " " " "			
#12	" 10d	" , " " " rough siding, if used.			
# 3	" 6d	" , " " " battens, if used.			
# 8	" 3d	" , fine galvanized shingle, if shingle siding is used.			
#12	" 8d	" , common wire, if rustic or drop siding is used.			
* 5	" 8d	" , casing, for finish			
* ½	" 4d	" , " ,for window casing.			
# 4	" 3d	" , fine galvanized shingle, if shingle roofing is used.			
# 3	" 2"No.9	" , Galvanized roofing, if galvanized corrugated roofing is used.			
# 2	" " 8	Lead Washers if Galvanized corrugated roofing is used.			
* 1	Pr. 3½ x 3½	Loose pin butt hinges, with screws			
* 1		Rim Latch, No. 8052, knob No. 9241			
* 1	"	Spring Bolts for sash, with screws			

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
	Paint.				
* 1½	Gal.	Regulation Body Gray Paint			
* ½	"	" trim White " , outside			
* 1	"	" roof Green "			
# ½	"	Linseed Oil			
#1/4	"	Turpentine			

Note:- If Laird & Sinclair paints are used, deduct the oil and turpentine and add
#1/2 Gal. Aroturps

SERIES NO. 3.

GENERAL SERVICE BUILDINGS

PLAN NO. 3-B. BUILDING
12' x 12' - 8' Walls
1/2 Pitch Roof

PLAN NO. 3-B

GENERAL SERVICE BUILDING

12'0" x 12'0" - 8'Walls
1/2 Pitch Roof

This building is designed for general utility purposes, i. e., tool house, storehouse, small shelter house, woodshed, etc. Minor changes in plans, such as omission of floor and other similar changes may be necessary to meet particular needs. For the building as designed, all items preceded by the mark (*) are standard, and are not subject to change or choice. Purpose of the building, condition of the local lumber markets, and isolation of certain building sites from markets carrying a varied stock of lumber, are factors which will govern selection of the type of outside wall cover, kind of roofing, and size and kind of nails. Elevation of a given building site will determine the slope of roof and the kind of roof bracing to use. All items subject to change or choice are indicated by the mark (#). To prepare a complete order list, select the items marked (#) which, under the particular circumstances, will be best adapted for use at a given building site. Add such items to those marked (*). To all items of lumber, add the specifications shown under "Grade and Species" and "Finish". For example: two pieces 4" x 6" - 16' No. 1 Common Redwood, cedar, Douglas fir or pine, rough. To all items of hardware, add only such descriptive matter as is necessary to adequately describe each item. For example: 2 pounds 30d common wire nails - 3 pounds 3d fine galvanized wire nails. Do not show on the order list the purpose for which the hardware items are to be used.

Estimated cost of construction - labor at $4.00 per day, $45.00.

BUILDER'S LIST OF MATERIALS

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
	Sills.				
* 5	4 x 6 - 12	Sills	(1st choice, R.W.or Heart Cedar (2nd " , D.F.,W.F. or R.F. (3rd " , Y.P.	Rough " "	120
*	6 x 6	Underpinning	Redwood or Heart Cedar	"	
		For item of "Underpinning" no amount is given. The actual amount needed will depend upon the slope of the ground of each particular building site. Make due allowance for this item in the lumber order. If split or round material is used, this item may be eliminated from the lumber list.			
	Studs, Plates, Girts, etc.				
*14	2 x 4 - 16	Studding	No. 1 Common, any species	Rough	150
* 8	2 x 4 - 12	Plates	" " " "	"	64
*10	2 x 4 - 12	Girts, trimmers, gable ends, etc.	" " " "	"	80
*7	2 x 6 - 12	Floor joists	" " " "	"	84
* 4	2 x 6 - 12	Bridging	" " " "	"	48
	Flooring.				
#12	1 x12 - 12	Flooring	No. 1 Common, any species	" "	144
#18	5/8 or 1x3-12 or	" , battens	No. 1 Common, any species	"	54
#47	1 x 4 - 12	" , T. & G. Vertical grain	"C" Grade California, or any species, or No 2 Oregon D.F.		188

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
		Outside Wall Cover.			
Style (a).					
#30	1 x 4 - 12	Walls and gable ends	No. 1 Common, any species	Rough	540
#30	5/8 or 1 x 3 - 18	" " " battens	" " " " "	"	135
Style (b).					
#12	1 x12 - 18	Base below water table	" " " " "	"	216
#11	5/8 or 1 x 3 - 18	" " battens	" " " " "	"	50
#58	1 x 8 - 12	Lap, laid horizontally 6" to weather above water table	" " " " "	"	464
* 4	1 x 4 - 14	Water Table	" " " " "	"or S1S	19
* 4	1 x 6 - 14	Belt course	" " " " "	" " "	28
* 4	1 x 4 - 14	" "	" " " " "	" " "	19
* 4	1 x 4 - 18	Corner boards	" " " " "	" " "	24
* 1	4 x 4 - 12	Brackets	" " " " "	" " "	16
Style (c).					
#76	1 x 8 - 12	Rustic or drop siding	"C"Grade California, any species, or No. 3 Clear Oregon D. F.	"	608
Style (d)					
#66	1 x 4 - 12	Sheeting for shingles	No.2 Common, any species	"	264
#3750		Shingles, 5" to weather	Star A Star, red cedar		

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
	Roof Frame (for elevation up to 3000 ft.) 18" eaves and gable projection.				
# 6	1 x 6 - 12	Ceiling joists	(No.2 Clear D.F.1st choice	Rough	36
			(" " " W.F.2nd "	"	
			(" 3 " Y.P.3rd "	"	
#14	2 x 4 - 12	Rafters	(same as above)	"	112
# 4	2 x 6 - 12	Barge boards	No. 1 common, any species	" or S4S	48
# 4	1 x 2 - 12	" " trim	" " " " "	" " "	8
# 2	1 x10 - 18	Gable ends frieze	" " " " "	" " "	30
# 2	1 x 4 - 12	Frieze bet.rafter over eaves	" " " " "	" " S1S	8
# 6	1 x 6 - 12	Collar Beam	" " " " "	"	36
# 2	1 x 8 - 18	Soffit	" " " " "	" " S4S	24
# 2	1 x 6 - 18	"	" " " " "	" " "	18
	Roof Frame (for elevation over 3000 ft.) 18" eaves and gable projection				
# 5	2 x 6 - 12	Ceiling joists	(No.2 Clear D.F.1st choice	"	60
			(" " " W.F.2nd "	"	
			(" 3 " Y.P.3rd "	"	
#14	2 x 6 - 12	Rafters	(same as above)	"	168
# 4	2 x 6 - 12	Barge boards	No. 1 Common, any species	" " S4S	48
# 4	1 x 2 - 12	" " trim	" " " " "	" " "	8
# 2	1 x10 - 18	Gable ends frieze	" " " " "	" " "	30
# 2	1 x 6 - 12	Frieze between rafters over eaves	" " " " "	" " S1S	12
# 3	2 x 6 - 14	Collar beams 2' O.C.	" " " " "	"	42
# 2	2 x 6 - 18	Angle struts	" " " " "	"	36
# 3	1 x 6 - 12	King struts 2' O.C.	" " " " "	"	18
# 2	1 x 8 - 18	Soffit	" " " " "	" " S4S	24
# 2	1 x 6 - 18	"	" " " " "	" " "	18

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
		Roof Cover.			
* 4	1 x12 - 16	Sheeting 18" rafter projection	No.1 Common, any species	Rough or S4S	64
* 2	1 x 8 - 16	Ridge boards or capping	" " " " "	"	22
#26	1 x 4 - 16	Sheeting for shingles above eaves	" 2 " " "	"	139
#2500		Shingles, 11½" to weather	Star A Star, Red , Cedar		
		or			
		If shakes will be used (See Shake Table for amounts of material)			
#15		10' Corrugated Galv.iron, 26 gauge			
		Door and Window Frames.			
* 1	2 x 8 - 8	Sills for door & window	No.2 Clear, any species	Rough or SIS	11
* 2	1 x 6 - 18	For door frame	" " " " "	" " "	18
* 1	1 x12 - 12	" window frame	" " " " "	" " "	12
* 2	½ x1½ - 14	Door and window stops	" " " " "	" " "	4
		Mill Order, Door and Window.			
* 1	2'8" x 6'8" - 1½"	Colonial 5 cross panel door (See Cut No.B.M -3)			
* 1	2'6" x 3'6" - 1½"	Two light window, 21 oz. glass			

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
Hardware List.					
10 Ft.	30 Gauge	Galvanized Iron Flashing			
* ½ lb.	4d	Finish nails, stops etc.			
* 4 "	8d	Casing nails, corner boards, casings, etc.			
* 5 "	20d	Common " , frame			
*30 "	10d	" " "			
* 7 "	8d	" " "			
# 8 "	3d	Fine Galv.nails, if shingles on roof; if shakes, see Table B.M-2 in Manual			
#14 "	10d	Common if walls are rough 1 x 12.			
# 6 "	8d	" " " " " (battens)			
#16 "	8d	" " " " rustic or drop-siding			
#11 "	3d	Fine galv.nails if walls are shingle			
# 7 "	10d	Sheeting " "			
# 4 "	2" No.9'	Galv.roofing nails for use with galv.iron			
# 3 "	No.8	Lead washers			
* 1 pr.	3½ x 3½	Loose pin butt hinges for door.			
* 1		Rim latch #8052, knob #9241			
* 2 pr.		Window spring bolts.			
Paint.					
* 2½ Gals.		Regulation Body, Gray Paint			
* 1 "		" Trim, White "			
* 2 "		" Roof, Green "			
* 1 Lb.		Putty			
# 1 Gal.		Boiled Linseed Oil			
# ½ "		Turpentine			

Note:- If Laird & Sinclair paint is used, eliminate Linseed Oil and Turpentine, and add:

# 1 Gal. Aroturps for each 5 gallons of outside paint on Order List.

SERIES NO. 3

GENERAL SERVICE BUILDINGS

PLAN NO. 3-B. BUILDING
12' x 14' - 8' Walls
1/2 Pitch Roof

PLAN NO. 3-B

GENERAL SERVICE BUILDING

12'0" x 14'0" - 8'Walls
1/2 Pitch Roof

This building is designed for general utility purposes, i.e., tool house, storehouse, small shelter house, woodshed, etc. Minor changes in plan, such as omission of floor and other similar changes may be necessary to meet particular needs. For the building as designed, items preceded by the mark (*) are standard, and are not subject to change or choice. Purpose of the building, condition of the local lumber markets and isolation of certain building sites from markets carrying a varied stock of lumber are factors which will govern selection of the type of outside wall cover, kind of roofing, and sizes and kinds of nails. Elevation of of a given building site will determine the slope of roof and the kind of roof bracing to use. All items subject to change or choice are indicated by the mark (#). To prepare a complete order list, select the items marked (#) which, under the particular circumstances will be best adapted for use at a given building site. Add such items to those marked (*). To all items of lumber, add the specifications shown under "Grade and Species" and "Finish". For example: two pieces 4" x 6" - 16' No. 1 Common Redwood, cedar, Douglas fir or pine, rough. To all items of hardware, add only such descriptive matter as is necessary to adequately describe each item. For example: 2 pounds 30d common wire nails - 3 pounds 3d fine galvanized wire nails. Do not show on the order list the purpose for which the hardware items are to be used.

Estimated cost of construction - labor at $4.00 per day -- $50.00.

BUILDER'S LIST OF MATERIALS

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
		Sills.			
* 2	4 x 6 - 12	Sills	(1st choice, R.W.or Heart Cedar	Rough	48
* 2	4 x 6 - 14	"	(2nd " , D.F.,W.F.,or R.F.	"	56
			(3rd " , Y.P.		
*	6 x 6	Underpinning	Redwood or Heart Cedar		

For item "Underpinning" no amount is given. The actual amount needed will depend upon the slope of the ground of each particular building site. Make due allowance for this item in the lumber order. If split or round material is used, this item may be eliminated from the lumber list.

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
		Studs, Plates, Joists, etc.			
*15	2 x 4 - 16	Studding	No. 1 Common, any species	Rough	160
* 4	2 x 4 - 12	Plates	" " " " "	"	33
* 4	2 x 4 - 14	"	" " " " "	"	39
* 7	2 x 4 - 16	Girts, trimmers, etc.	" " " " "	"	75
* 8	2 x 6 - 12	Floor Joists	(No. 2 D. F. first choice, clear	"	96
			(" " W. F. second " , "		
			(" " Y. P. third " , "		
* 2	2 x 6 - 12)	Bridging	No. 1 Common, any species	"	52
* 2	2 x 6 - 14)				
		Flooring.			
#12	1 x12 - 14	Flooring	No. 1 Common, any species	"	168
#18	5/8 or 1 x 3 - 14	Battens	" " " " "		63
#	1 x 4	Flooring, T. & G.	"C"Grade California, any species, or No. 2 Clear Oregon D.F"		210

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
Outside Wall Cover.					
Style (a).					
#26	1 x12 - 18	Walls	No. 1 Common, any species	Rough	468
# 5	1 x12 - 16	Gable ends	" " " " "	"	80
#410	Lin.Ft.	Battens, 1 x 3	" " " " "	"	103
Style (b).					
#	1 x 8	Siding, Laid horizontally, 6" to weather	" " " " "	"	385
* 2	1 x 6 - 12	Belt Course	" " " " "	"or S1S	12
* 2	1 x 6 - 16	" "	" " " " "	" " "	16
* 2	1 x 4 - 16	" "	" " " " "	" " "	11
* 2	1 x 4 - 12	" "	" " " " "	" " "	8
* 4	1 x 4 - 18	Corner Boards	" " " " "	" " "	24
#13	1 x12 - 18	Base	" " " " "	"	234
#234	Lin.Ft.	Battens, 1 x 3	" " " " "	"	59
# 2	1 x 4 - 12	Water Table	" " " " "	" or S1S	8
# 2	1 x 4 - 16	" "	" " " " "	" " "	11
* 1	4 x 4 - 8	Brackets	" " " " "	" " S4S	16
Style (c).					
#670	Bd.Ft.8"	Rustic or drop-siding	"C"Grade California, any species, or No. 3 clear Oregon D.F.		670
Style (d).					
#	1 x 4	Sheeting	No. 2 Common, any species	Rough	275
#4000		Shingles, 5" to weather	Star A Star, Red cedar		

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
	Roof Frame (For elevations up to 3000 ft.)				
# 7	1 x 6 - 12	Ceiling joist	(No.2 Clear,D.F.,1st choice	Rough	84
			(" " " W.F.,2nd "	"	
			(" " " Y.P.,3rd "	"	
#16	2 x 4 - 12	Rafters	Same as above	"	128
# 4	2 x 6 - 12	Barge Boards	No. 1 Common, any species	"or S4S	48
# 4	1 x 2 - 12	" " trim	" " " " "	" " "	8
# 2	1 x10 - 16	Gable end frieze	" " " " "	" " S1S	27
# 2	1 x 4 - 14	Rafter " "	" " " " "	" " "	6
# 4	1 x 6 - 12	Collar beams	" " " " "	"	12
# 2	1 x 8 - 16	Soffit	" " " " "	"or S1S	22
# 2	1 x 6 - 16	"	" " " " "	" " "	16
	Roof Frame (For elevations over 3000 ft.).				
# 7	2 x 6 - 12	Ceiling joist	(No.2 Clear, D.F.,1 st choice	Rough	84
			(" 2 " , W.F.,2nd "	"	
			(" " " , Y.P.,3rd "	"	
#16	2 x 6 - 12	Rafters	Same as above	"	192
# 4	2 x 6 - 12	Barge boards	No. 1 Common, any species	"or S4S	48
# 4	1 x 2 - 12	" " trim	" " " " "	" " "	8
# 2	1 x10 - 16	Gable end frieze	" " " " "	" " "	27
# 2	1 x 6 - 14	Rafter end frieze	" " " " "	" " "	14
# 2	1 x 8 - 16	Soffit	" " " " "	" " "	22
# 2	1 x 6 - 16	"	" " " " "	" " "	16
# 4	2 x 6 - 14	Collar beams	" " " " "	"	56
# 4	2 x 6 - 16	Angle struts	" " " " "	"	64
# 2	1 x 6 - 18	King Strut	" " " " "	"	18

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
	Roof Cover.				
* 2	1 x12 - 18	Sheeting, rafter end	No.1 Common, any species	Rough or S1S	36
* 2	1 x 6 - 18	" " "	" " " " "	" " "	18
* 2	1 x 8 - 18	Ridge Boards	" " " " "	" " "	18
#	1 x 4	Sheeting, 8" O.C.	" 2 " " "	"	160
#2750		Shingles, 4½" to weather	Star A Star, Red Cedar		
	or				
If shakes are to be used, see "Shake Table" for amount of materials.					
	or				
# 8	1 x 6 - 18	Sheeting	No. 1 Common, any species		72
#17		10" 26 gauge Corrugated Galvanized Iron			
#18	Lin.Ft.	Plain Galvanized Ridge Capping, 6" sides.			
	Door and Window Frames.				
* 1	2 x 8 - 12	Door and window sills	No. 2 Clear, any species	Rough or S1S	16
* 2	1 x 6 - 18	Door frame	" " " " "	" " "	18
* 2	1 x12 - 12	Window frame	" " " " "	" " "	24
* 2	½ x1½ - 16	Door and window stops	" " " " "	" " "	4

Mill Order List (Door and Window)

* 1 2'8" x 6'8"-1⅜" Colonial, 5 cross panel door (See Cut No. B.M.-3)
* 2 2'6" x 3'6"-1⅜" 2-light windows, 21-oz.glass.

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
Hardware List.					
*10 Ft.	4"	Galvanized Iron Flashing, 30 gauge			
*35 Lbs.	10d	Nails, Common wire, for frame			
# 5 "	6d	" , " " , if battens are used			
*15 "	20d	" , for frame			
#10 "	3d	" , fine galvanized, for shingle roofing			
# 5 "	2"No.9	" , Galvanized roofing, for use with galvanized iron			
# 4 "	" 8	Lead Washers " " " " "			
#15 "	10d	" , Common wire, if rough board siding is used.			
# 5 "	8d	" , " " " " " " " "			
#20 "	8d	" , " " , if rustic or drop siding is used.			
#15 "	3d	" , fine galvanized iron shingle, if shingle siding is used.			
# 8 "	10d	" , common, shingle wall sheeting, if shingle siding is used.			
* 5 "	8d	" , casing, for corner boards, trim, etc.			
* 1 "	4d	" , finish, " casings, etc.			
* 1 Pr.	3½ x 3½	A.C. Butts, with screws			
* 1		Rim Latch, No. 8052, knob #9241			
* 2 Pr.		Spring bolts for sash.			
Paint.					
* 2½ Gals.		Regulation Body Gray Paint			
* 1 "		" trim White "			
* 2 "		" roof Green "			
# 1 "		Linseed Oil			
#1/4 "		Turpentine			
Note:- If		Laird & Sinclair paints are used, deduct Oil and Turpentine and add			
# 1 Gal.		Aroturps.			

SERIES NO. 3

GENERAL SERVICE BUILDINGS

PLAN NO. 3-B. BUILDING
14' x 16' - 8' Walls
1/2 Pitch Roof

PLAN NO. 3-B

GENERAL SERVICE BUILDING

14'0" x 16'0" - 8'Walls
1/2 Pitch Roof

This building is designed for general utility purposes, i.e., storehouse, wagon shed, garage, woodshed, etc. Minor changes in plan, such as omission of floor, and other similar changes, may be necessary to meet particular needs. For the building as designed, items preceded by the mark (*) are standard, and are not subject to change or choice. Purpose of the building, condition of the local lumber markets, and isolation of certain building sites from markets carrying a varied stock of lumber, are factors which will govern selection of the type of outside wall cover, kind of roofing, and size and kind of nails. Elevation of a given building site will determine the slope of roof and the kind of roof bracing to use. All items subject to change or choice are indicated by the mark (#). To prepare a complete order list, select the items marked (#) which, under the particular circumstances will be best adapted for use at a given building site. Add such items to those marked (*). To all items of lumber, add the specifications shown under "Grade and Species" and "Finish". For example: two pieces 4" x 6" - 16' No. 1 Common Redwood, cedar, Douglas fir or pine, rough. To all items of hardware, add only such descriptive matter as is necessary to adequately describe each item. For example: 2 pounds 30d nails, common wire - 3 pounds 3d fine galvanized wire nails. Do not show on the order list the purpose for which the hardware items are to be used.

Estimated cost of construction - labor at $4.00 per day -- $55.00.

BUILDER'S LIST OF MATERIALS

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
	Sills.				
* 2	4 x 6 - 14	Sills	(1st choice, R.W.or Heart Cedar	Rough	56
* 3	4 x 6 - 16	"	(2nd " , D.F.,W.F.or R.F.		96
			(3rd " , Y.P.		
*	6 x 6	Underpinning	Redwood or Heart Cedar	Rough	

For item of "Underpinning" no amount is given. The actual amount needed will depend upon the slope of the ground of each particular building site. Make due allowance for this item in the lumber order. If split or round material is used, this item may be eliminated from the lumber list.

	Studs, plates, joist, girts, etc.				
*17	2 x 4 - 16	Studding	No. 1 common, any species	Rough	182
* 4	2 x 4 - 16	Plates	" " " " "	"	43
* 4	2 x 4 - 14	"	" " " " "	"	38
* 9	2 x 4 - 16	Girts,trimmers and gable studs	" " " " "	"	96
* 2	2 x 6 - 14)	Bridging	" " " " "	"	60
* 2	2 x 6 - 16)				
* 9	2 x 6 - 14	Floor joists	(No.2 Clear D.F.,1st choice	"	126
			(" " " W.F. 2nd "	"	
			(" " " Y.P. 3rd "	"	
	Flooring				
#14	1 x12 - 16	Flooring	No.1 common, any species	"	224
#20	5/8x3 - 16	" ,battens	" " " " "	"	80
	or				
#53	1 x 4 - 16	" ,T.& G.	"C"Grade California, any species,or No.2 clear Oregon D.F.	"	283

No. Pcs.	Size	Purpose and Location	Grade and species	Finish	Bd.Ft.
	Outside Wall Cover.				
Style (a).					
#30	1 x12 - 18	Walls	No. 1 Common, any species	Rough	540
# 8	1 x12 - 14	Gable end (walls)	" " " " "	"	112
#30	5/8 or 1 x 3 - 18	Battens, Walls	" " " " "	"	135
# 8	5/8 or 1 x 3 - 14	" "(gable ends)	" " " " "	"	28
Style (b).					
#500 Bd.Ft.	1 x 8	Lap siding, 6" to weather above water table	" " " " "	"	500
#16	1 x12 - 18	Base below water table	" " " " "	"	288
#15	5/8 or 1 x 3 - 18	" " " battens	" " " " "	"	68
# 2	1 x 4 - 18	Water table	" " " " "	"or S1S	12
# 2	1 x 4 - 16	" "	" " " " "	" " "	11
* 2	1 x 6 - 16	Belt course	" " " " "	" " "	16
* 2	1 x 6 - 18	" "	" " " " "	" " "	18
* 2	1 x 4 - 16	" "	" " " " "	" " "	11
* 2	1 x 4 - 18	" "	" " " " "	" " "	12
* 4	1 x 4 - 18	Corner boards	" " " " "	" " "	24
* 1	4 x 4 - 8	Brackets	" " " " "	" " "	11
Style (c).					
#800 Bd.ft.	8"	Rustic or drop siding	"C"Grade California or No.3 Oregon D.F.	"	800
Style (d).					
#330 Bd.Ft.		Sheeting	No.2 Common, any species	"	330
#5000		Shingles, 5" to weather	Star A Star, Red cedar		

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
		Roof frame (for elevations up to 3000 ft.).			
# 6	1 x 6 x 14	Ceiling joist	(No.2 Clear D.F.,1st choice	Rough	43
			(" " " W.F.,2nd "	"	
			(" " " Y.P.,3rd "	"	
#18	2 x 4 - 12	Rafters	Same as above	"	144
# 4	2 x 6 - 12	Barge boards	No. 1 Common, any species	"or S4S	48
# 4	1 x 2 - 12	" " trim	" " " " "	" " "	8
# 4	1 x10 - 12	Gable end frieze	" " " " "	" " "	40
# 2	1 x 4 - 16	Frieze(bet.rafters, filler over plate	" " " " "	" " S1S	11
# 3	1 x 6 - 14	Collar beams	" " " " "	"	21
# 4	1 x 8 - 12	Soffit	" " " " "	" " "	32
# 4	1 x 6 - 12	"	" " " " "	" " "	24
		Roof Frame (for elevations over 3000 ft.)			
# 6	2 x 6 - 14	Ceiling joists	(No.2 Clear D.F.,1st choice	"	42
			(" " " W.F.,2nd "		
			(" " " Y.P.,3rd "		
#18	2 x 6 - 12	Rafters	Same as above	"	216
# 4	2 x 6 - 12	Barge boards	No. 1 Common, any species	"or S4S	48
# 4	1 x 2 - 12	" " , trim	" " " " "	" " "	8
# 4	1 x10 - 12	Gable end frieze	" " " " "	" " "	40
# 2	1 x 4 - 16	Frieze(bet.rafter)over plate	" " " " "	" " S1S	11
# 4	1 x 8 - 12	Soffit	" " " " "	" " "	32
# 4	1 x 6 - 12	"	" " " " "	" " "	24
# 3	2 x 6 - 14	Collar beams 2' O.C.	(No.2 Clear D.F.,1st choice	"	42
#			(" " " W.F.,2nd "		
			(" " " Y.P.,3rd "		

No. Pcs.	Size	Purpose and Location	Grade and species	Finish	Bd.Ft.
# 3	2 x 6 - 16	Angle Struts	(No.2 Clear D.F.,1st choice (" " " W.F.,2nd " (" " " Y.P.,3rd "	Rough	48
# 3	1 x 6 - 14	King struts 2' O.C.	Same as above	"	21
	Roof Cover.				
* 4	1 x12 - 14	Sheeting 18" rafter projection	No. 1 Common, any species	"or S1S	56
* 2	1 x12 - 12	" " " " "	" " " " "	" " "	24
* 2	1 x 8 - 14	Ridge boards or capping	" " " " "	" " "	19
* 1	1 x 8 - 12	" " " "	" " " " "	" " "	8
#190	Bd.Ft.1 x 4	Sheeting 8" O.C.for shingles above eaves	" 2 " " "	"	190
#3500		Shingles, 4½"to weather	Star A Star, Red Cedar		
	or				
#	If shakes will be used -- see "Shake Table" for amount of materials				
	or				
#120	Bd.Ft.1 x 6	Sheeting 2' O.C.	No. 1 Common, any species	"	120
# 20	Linear ft.	Plain Galv. ridge capping, 26 gauge			
	Door and Window Frames.				
* 1	2 x 8 - 12	Sills,doors and windows	No. 2 Clear, any species	"or S1S	16
* 2	1 x 6 - 18	For door frame	" " " " "	" " "	18
* 2	1 x12 - 12	" window frames	" " " " "	" " "	24
* 2	½ x1½ - 16	Door and window stops	" " " " "	" " "	4

No. Pcs.	Size	Location and Purpose	Grade and Species	Finish	Bd.Ft.
	Mill Order (Door and Windows).				
* 1	2'8" x 6'8"-1½"	Colonial, 5 cross panel door (See Cut No.B.M.-3)			
* 2	2'6" x 3'6"-1½"	2 lights windows, 21-oz.glass,			
	Hardware List.				
* 1	lb. 4d Nails,	finish, stops,etc.			
* 5	" 8d " ,	casing, corner boards,frames,etc.			
* 7	" 20d " ,	common wire for frame			
*35	" 10d " ,	" " " "			
* 9	" 8d " ,	" " " "			
#11	" 3d " ,	fine galvanized for roof(if shingles are used)--if shakes, see Table No. B.M.-2 in Manual			
#17	" 10d " ,	common, if walls are all rough 1 x 12			
# 7	" 8d " ,	" " " " " " " battens			
#22	" 8d " ,	" , if rustic or drop siding walls			
#18	" 3d " ,	fine galvanized if walls are shingle			
# 8	" 10d " ,	common, if sheeting walls are used.			
# 7	" 2" No.9 ,	Galvanized roofing nails for use with galvanized iron			
#	6" No. 8	Lead washers for use with galvanized iron.			
* 1	Pr.3½ x 3½	Loose pin butt hinges, A.C.			
* 1		Rim latch # 8052, knob #9241			
* 2	Pr.	Window spring bolts			
*10	linear feet	4" Galvanized Iron Flashing 30 gauge			

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
		Paint.			
* 4	Gals.	Regulation Body Gray Paint			
* 2	"	" trim White "			
* 2½	"	" roof Green "			
* 1	Lb.	Putty			
# 1	Gal.	Boiled Linseed Oil.			
#1/4	"	Turpentine			

Note: If Laird & Sinclair paint is used, eliminate Linseed Oil and Turpentine,
and add:

1 Gal. Aroturps to each/5 gallon of outside paint on Order List.

BUILDINGS

SERIES NO. 3

PLAN NO. 3-B. WAREHOUSE
16'0" x 24'0" - 12'Walls

COERT DUBOIS,
District Forester.

May 1, 1917.

PLAN NO. 3-B

WAREHOUSE

16' x 24' - 12' Walls

This building is designed for warehouse where need might arise for large storage space at some central shipping point or for storing a Forest stock of grain, etc., over winter. Elevation of the particular building site will determine the slope of the roof and the kind of roof bracing to use (see specifications). In certain instances to use galvanized corrugated iron siding and roofing may be advisable. Ordinarily, board siding and shingle roofing will be satisfactory. All items subject to change or choice are indicated by the mark (#). To prepare a complete order list select the items marked (#) which, under the particular circumstances, will be best adapted for use at a given building site. Add such items to those marked (*). To all items of lumber add the specifications shown under "Grade and Species", and "Finish". For example, two pieces 4" x 6" - 16' No. 1 Common, redwood, cedar, Douglas fir or pine, rough. To all items of hardware add only such descriptive matter as is necessary to adequately describe each item. For example, 2 pounds 30d. common wire nails - 3 pounds 30d. fine galvanized wire nails. Do not show on the order list the purpose for which the hardware items are to be used.

Estimated cost of construction - labor at $4.00 per day - $75.00.

Builder's List of Material

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
		Sills.			
* 2	4 x 6 - 16	End Sills	(1st Choice, RW or Heart cedar)		64
* 3	4 x 6 - 14	Side and center sills	(2nd " D.F.,W.F., or R.F.)	Rough	84
* 3	4 x 6 - 12	" " " "	(3rd " Yellow pine)		72
* 1	6 x 6 - 18	Underpinning	Redwood or Heart cedar	"	54

Note:- Item of underpinning provides sufficient material for lengths of 1 foot on 6 foot centers; the actual amount needed will depend upon slope of ground at building site. The builder should keep this in mind when preparing the lumber order list.

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
		Studs, Plates, Girts, Braces, Joists.			
*10	2 x 4 - 16	Plates	No. 1 Common, any species	Rough	107
*40	2 x 4 - 12	Studs 2' O.C.	" " " "	"	320
* 4	4 x 4 - 12	Corner studs	" " " "	"	64
*20	2 x 4 - 16	Braces and trimmers	" " " "	"	214
*13	2 x 6 - 16	Floor joists	" " " "	"	208
* 2	2 x 6 - 16)	Bridging	" " " "	"	80
* 4	2 x 6 - 12)				
* 5	2 x 6 - 16	Ceiling joist 4" O.C.	" " " "	"	80

Note:- Cut studding 10'2" long - the surplus about 22" will make girts around walls.

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
		Flooring			
*25	1 x 12 - 16	Flooring	No. 1 Common, any species	Rough	400
*34	5/8 or 1x3-16	" battens	" " " "	"	136
		Note:- No loose knots accepted			
		Wall Cover and Trim			
*80	1 x 12 - 12	Walls and gable	" " " "	"	960
*80	5/8 x 3- 12	Battens	" " " "	"	240
* 8	1 x 6 - 12	Corner boards	" " " "	"	48
* 2	1 x 3 - 18	Water table (gable ends)	" " " "	"	9
* 2	1 x 6 - 18	Belt course (" ")	" " " "	"	18
* 2	1 x 6 - 18	" " bottom (ends bldg)	" " " "	"	18
* 2	1 x 6 - 14	" " " (sides)	" " " "	"	14
* 2	1 x 6 - 12	" " " (")	" " " "	"	12
* 2	1 x 6 - 16	" " " (")	" " " "	"	16
* 2	4 x 4 - 12	Brackets	" " " "	"	32
* 1	4 x 4 - 12	"	" " " "	"	8

Frame for 1/3 Pitch Roof (For use at an elevation under 2000 feet).
18" Projection at Gable and at Eaves.(See specifications)

No. Pcs	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
#26	2 x 4 - 12	Rafters	(No. 2 Clear, D. F. 1st choice	Rough	208°
			(" " W. F. 2nd "	"	
			(" " Y. P. 3rd "	"	
# 4	2 x 6 - 12	Barge boards	No. 1 Common, any species	"	48
# 4	1 x 2 - 12	" " trim	" " " "	"	8
# 2	1 x10 - 20	Gable end frieze	" " " "	"	31
# 3	1 x 6 - 16	Fillers between rafters	" " " "	"	24
#11	1 x 6 - 16	Ceiling joist (ties)	Same as for rafters	"	88°
# 6	1 x 6 - 16	Collar beams	" " " "	"	48°
# 2	1 x 8 - 20	Soffit gable ends	No. 1 Common, any species	"	40°
# 2	1 x 6 - 20	" " "	" " " "	"	20°
#16	1 x12 - 12	Gable end boards	" " " "	"	192
#16	5/8x3 - 12	" " battens	" " " "	"	48
#28	1 x 4 - 16	) Sheeting above eave			150
#28	1 x 4 - 12	) projection for shingles	" " " "	"	112
# 4	1 x 8 - 14	Ridge boards	" " " "	"	38
#5250 - -		Shingles 4½" to weather or	Star A Star red cedaf		
#56 pcs. - -		26-Gauge galvanized corrugated iron			0
#28 Lin. Ft.-		26-Gauge plain galvanized ridge capping			0
#14	1 x 6 - 14	Sheeting for galvanized iron	No. 1 Common, any species	"	98°

If shakes are to be used see "Shake Table No. B.M.2 for amount

Frame for 1/2 Pitch Roof (For use at elevation over 3500 feet)
16" Projection at Gable and at Eaves (See specifications)

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
#26	2 x 6 - 14	Rafters	(No. 2 Clear D. F. 1st choice (" " W. F. 2nd " (" " Y. P. 3rd "	Rough " "	364^{0}
# 4	2 x 6 - 14	Barge boards	No. 1 Common, any species	"	56
# 4	1 x 2 - 14	" " trim	" " " "	"	10
# 4	1 x10 - 12	Gable end frieze	" " " "	"	40
# 3	1 x 6 - 16	Fillers between rafters over eaves	" " " "	"	24
#11	2 x 6 - 16	Ceiling joists	Same as for rafters	"	176^{0}
#11	2 x 6 - 12	Angle struts	" " " "	"	132^{0}
# 6	1 x 6 - 16	King struts	" " " "	"	48^{0}
# 4	1 x 8 - 12	Soffits (gable ends)	No. 1 Common, any species	"	32^{0}
# 4	1 x10 - 12	" " "	" " " "	"	40^{0}
# 3	1 x 6 - 16	Rafter ties to ceiling joists near eaves	" " " "	"	24^{0}
#16	1 x12 - 16	Gable end boards	" " " "	"	256
#16	5/8x3 - 16	" " battens	" " " "	"	64
* 4	1 x12 - 16	Sheeting 18" rafter projection	" " " "	"	64^{0}
* 4	1 x12 - 12	" 18" "	" " " "	"	48^{0}
#34	1 x 4 - 16	" above eaves 8" O.C.	" " " "	"	182
#34	1 x 4 - 12	" " " 8" O.C.	" " " "	"	136
# 4	1 x 8 - 14	Ridge boards or capping	" " " "	"	38
#5750	- -	Shingles $4\frac{1}{2}$" to weather	Star A Star red cedar		
		(For galvanized iron roof)			
#10	1 x 6 - 16	Sheeting about $3\frac{1}{2}$" O.C.	No. 1 Common, any species	"	80^{0}
#10	1 x 6 - 12	" " $3\frac{1}{2}$" O.C.	" " " "	"	60^{0}
56	pcs.- -	Corrugated galv. iron roofing, 26-gauge, 7' long, 27" wide			0
28	Lin. Ft.	26-gauge plain galvanized ridge capping			0

If shakes are to be used, see Shake Table B.M.-2 for amounts of materials

No. Pcs	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
	Shelves, Bins, Etc.				
		See specifications.			
	Door and Window Frames				
* 1	2 x 8 - 12	Sills - door & windows	No. 2 Clear, any species	Rough of S1S	16
* 4	1 x 6 - 16	Jambs and casings	" " " "	" " "	32
* 2	½ x 1½-16	Stops	" " " "	" " S4S	4
	Mill Order - Window				
* 1	- - -	2-light, 21 oz. glass window, width 4', length (or height) 3'1½" plain rail.			

Note:- The door should be made of 1 inch lumber, rough or S1S and battens 4' wide by 7' high, and hung on inside with strap hinges. This lumber is provided for in wall cover list.

Hardware

* 5#	30d.	Common nails o
*25#	20d.	" " o
*50#	10d.	" " o
*25#	8d.	" " o
* 5#	6d.	" " o
* 2#	8d.	Casing " - door and windowo
* 1#	10d.	" " " " " o
* 1#	2d.	Fine galvanized nails for flashing o
#20#	3d.	" if shingles are used for roof
# 7#	10d.	Common if " " " " " sheeting
# 4#	10d.	" if galvanized iron " " " o
#10#	2d.	No. 9 galv. barbed roofing nails for galv. iron o
# 9#		No. 8 lead washers for above nails o
* 1 -		Safety hasp and staple with screws o
* 2 Pr.		Window spring bolts o
* 1 "		10" strap hinges o

*44 Lin. Ft. Galvanized iron, 30-gauge, flashing 4" wide

Paint

* 5½	Gals.	Regulation body - gray
* 4	"	" roof - green
* 1½	"	" trim - white
# 1	"	Boiled linseed oil
# ½	"	Turpentine

Note:- If Laird & Sinclair paint is used, eliminate oil and turpentine and add -

# 1 gal. Aroturps for each 5 gallons of paint on the order list.

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.

If galvanized siding is used, eliminate all items except those under -
Sills
Studs, Plates, Girts, Braces, Joists
Flooring
Roof of selected pitch after which the mark (o) appears
Door and windows
Hardware after which the mark (o) appears, and add -

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
24	1 x 6 - 12	Sheeting 2' O.C.	No. 1 Common, any species	Rough	114
18	1 x 6 - 16	" 2' O.C.	" " " "	"	144
4	2 x 4 - 16	Gable studs	" " " "	"	43

Galvanized Corrugated Siding needed with
1/3 Pitch Roof

40 pcs. - - -	7' Corrugated galvanized iron, 26 gauge
48 " - - -	6' " " " 26 "
50 Lin. Ft. -	Plain galvanized 26 gauge ridge capping, corner finish

Galvanized Corrugated Siding needed with
1/2 Pitch Roof

40 pcs. - - -	7' Corrugated galvanized iron, 26 gauge
40 " - - -	6' " " " 26 "
8 " - - -	8' " " " 26 "
50 Lin. Ft. -	Plain galvanized iron, 26 gauge, ridge capping, corner finish

14#	2d.	No. 9 Galvanized roofing nails
10#	- -	No. 8 Lead washers
20#	10d.	Common wire nails

SPECIFICATIONS

FOR

WAREHOUSE

PLAN NO. 3-B

16' x 24' - 12' Walls

These specifications are intended to embrace all material necessary in the erection and completion of the building in all its parts, and to furnish such instructions as appear necessary to give the builder a general idea of the plan. Variations due to different locations and accessibility of lumber markets have been considered and estimates prepared.

The general plan as regards construction of frame and other vital parts of the structure is to be followed unless permission to deviate from the plans and specifications has first been secured from the District Forester. Deviations of minor consequence, however, to take care of unforeseen local conditions and circumstances, may be made by the builder.

EXCAVATION.

Excavation for the foundation of the building shall be carried down to solid earth. The bottom of the excavation shall be level and smooth. When necessary to grade into unlevel ground for the purpose of providing a level building site, the slopes of the excavations resulting must clear the sides of the building by at least 3 feet. If necessary, provision should be made to prevent earth caving from the embankment from contacting with the sills. If foundation posts are of wood, they too should be protected.

FOUNDATION.

Do not place foundation blocks or underpinning further apart than 6 feet on center. Where snow loads are excessive or where the ground is not firm, place them on 4 foot centers throughout. Where underpinning on short centers are necessary, add sufficient material to the lumber order to provide for them.

Foundations should be either of -

(a) 6" x 6" heart cedar , redwood or Douglas fir underpinning, set upon substantial flat stones of sufficient thickness to project at least 4 inches above the ground. Wood blocks should never be used for footings under foundation posts.

(b) If substantial stones are not available, a masonry footing should be provided. For masonry use only hard stones, preferably flat ones. All should be carefully imbedded on their broadest faces in mortar of 1 part cement and 2 parts coarse, clean, sharp sand. Each layer should be well filled and flushed up on both sides and firmly bonded together. The tops should be made level to receive the underpinning. See Table No. C-4.

(c) Large stones of sufficient thickness to raise the will to a height of at least 12 inches above the ground.

(d) Blocks of masonry or concrete at least 12 inches high, 10 inches wide on top and 16 inches square at the bottom. The top of concrete and masonry blocks should be made level to receive the sills. See Concrete Section and Table No. C-4.

MATERIALS.

All structural materials should conform as closely as possible to the specifications given in the builder's list and lumber order list. That minor deviations must sometimes be made is recognized as unavoidable.

SILLS.

Should preferably be of cedar or redwood. Douglas fir may be used as a second choice.

Rectangular sills should be laid with the narrow face up.

Sills at corner should be halved together. When two or more pieces are necessary to form the total length of sill a splice should be made on the foundation supports, as indicated on the plan (see Cut B.M. No. 9).

Two or more joints should not occur on the same line of foundation posts. Arrange to have the splices made over foundation posts of different sets.

FLOOR JOISTS, STUDDING, BRIDGING, ETC.

Floor joists should be of selected sticks, straight grain and free from all knots larger than 1 inch in diameter; first choice being Douglas fir, second choice white fir, third choice yellow pine. Studding, headers, trimmers, plates, etc., may be of any straight grain material free from loose knots and knots which materially weaken the stick. Lay floor joists directly upon the sills. Where two joists form the span, use the lap joint; in all cases place the bow of the joists up. Place solid 2" x 6" bridging at the ends of each joist.

Corner studs should be 3 - 2" x 4" spiked together. The plan indicates methods of placing studs.

Headers over window openings and door openings should be double. If shingle siding is used double trimmers also.

Wall girts of 2"x 4" scantling should be placed horizontally in all outside walls midway between the top and bottom plates. If water table is used, a girt should be placed just below table to give nailing foundation for siding under water table. In such cases the wall girt should be placed midway between the water table and top plate.

Place ceiling joists directly over plates. Nail them securely to the rafters and toe nail them to the plate. If the building will be subject to snow load for ceiling joists, give particular care to the selection of good straight grain sticks free from knots larger than 1 inch in diameter and other imperfections that would weaken the stick. Use 5 - 20d. wire nails for nailing the ceiling joist to the rafters and 2 - 20d. wire nails to toe nail them to the plate.

ROOF.

Material for roofs of different pitches are provided in the material list. Use -

1/3 Pitch roof with 2" x 4" rafters and 1" x 6" ceiling joist and collar beams at elevations under 2000 feet.

1/3 Pitch roof with 2" x 6" rafters, 1" x 6" ceiling joists and collar beams at elevations between 2000 and 3500 feet.

1/2 Pitch roof with 2" x 6" rafters with 2" x 6" ceiling joists, 2" x 6" angle struts, 1" x 6" King strut and 1" x 6" collar beams at elevations over 3500 feet.

Exception to the above should occur only where snowfall is not a source of hazard.

Roof trusses should be well nailed with 10d. nails in 1 inch members and 20d. nails in 2 inch members. Do not over nail. Five nails in surface 6" x 6" are enough.

Rafters and other members of the roof frame should be of selected straight grain lumber; first choice Douglas fir, second choice white fir, third choice yellow pine, free from knots and other imperfections. Too much attention cannot be given to the selection of the best sticks of the lumber order for rafters.

Care should be taken to cut the rafters true in order that they rest firmly on the plate, meet squarely at the apex of the roof.

Roof projections should be sheeted solid with 1" x 12" rough or dressed lumber.

Rafter ends should be finished in the manner illustrated by the diagram "Section".

Use for roof covering either -

(1) Star A Star red cedar or redwood shingles.

(2) Shakes of white fir or sugar pine

(3) Galvanized iron (see B.M. Page 8)

(4) Lay shingles 4½ or 5 inches to weather on sheeting 8 inches on center. Nail them with 3d. fine galvanized shingle nails. Lay the bottom course of shingles double and project it 1½ inches beyond the sheeting. Allow a 1 inch projection of shingles over the barge board trim. Table No. B.M.-2 gives data on shakes. If shakes are used allow 1½ inches projection at eaves and 1 inch projection over barge board trim.

The ridge of the roof should be finished with 1" x 6" excepting in cases where galvanized iron roofing is used. With it, use galvanized ridge capping.

SIDING.

Use 1" x 12" boards and 1" x 3" battens free from loose knots and all knots of greater diameter than 1½ inches. Boards should also be free from weather checks, rot disfigurements and large pitch pockets. Finish corners with 1" x 4" boards. Nail rough siding with 3 - 10d. nails at sills, girts and plates.

Under certain conditions siding of galvanized corrugated iron may be desirable. Where it is, used, cut it out to fit up between rafters and project it to the roof sheeting. Finish the corners with plain galvanized ridge capping. Place sheeting for galvanized siding on 2 foot centers.

FLOOR.

Use rough lumber as per specifications with 5/8" x 3" or 1" x 3" battens under cracks. Avoid use of boards with loose knots.

SHELVES, BINS, ETC.

If to have shelves and bins or locker is desirable include sufficient material in the lumber order list to provide such accommodations. Order about 4 - 10d. wire nails per board foot of material ordered for this purpose.

DOOR AND WINDOW FRAMES.

Make the window frames as shown in the detail drawing of them.

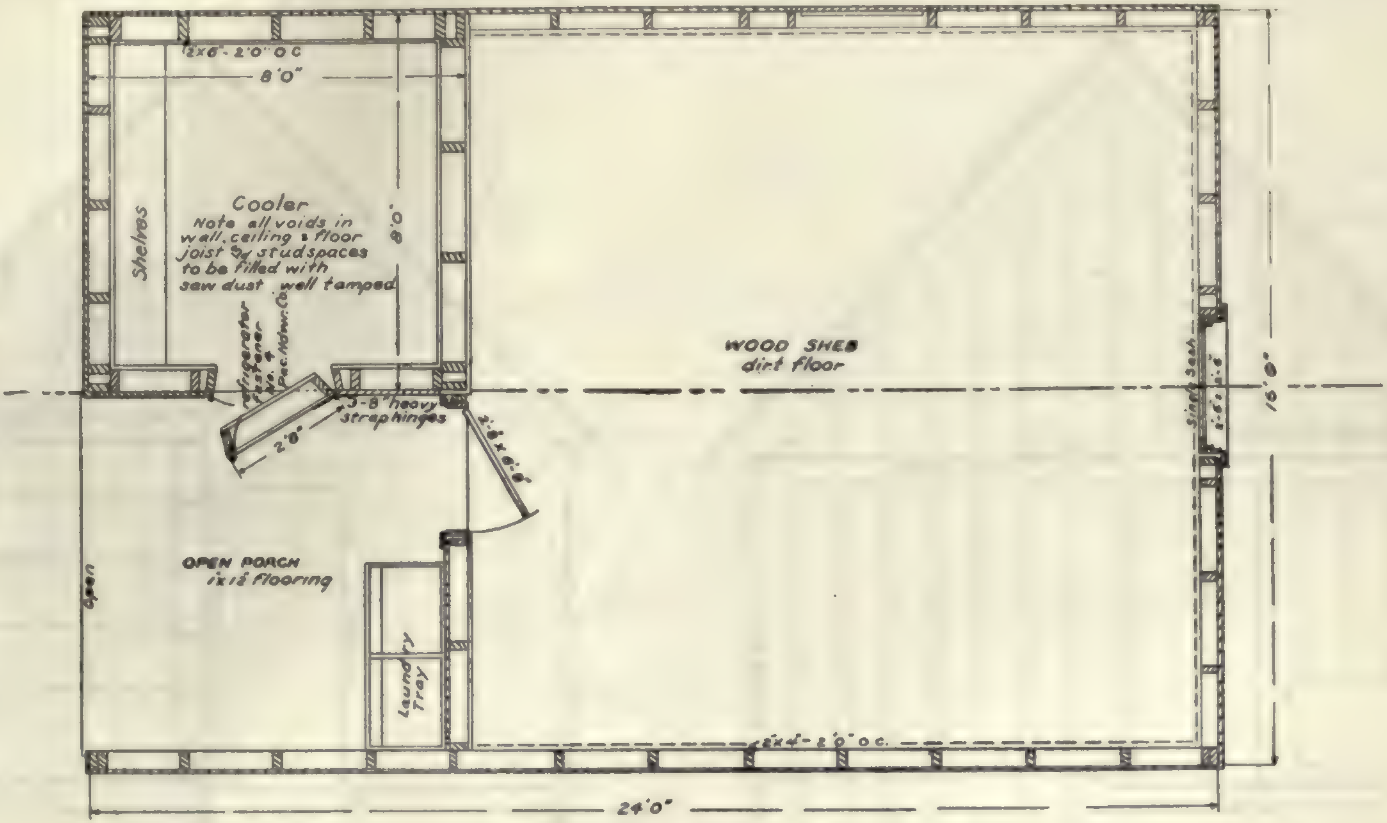
The door shall be made on the job of the dimensions given in Builder's List. Hang the door to swing inward.

PAINTING.

Color - Body - Standard gray, 2 coats
Roof - " green 2 "
Trim - " white 2 "

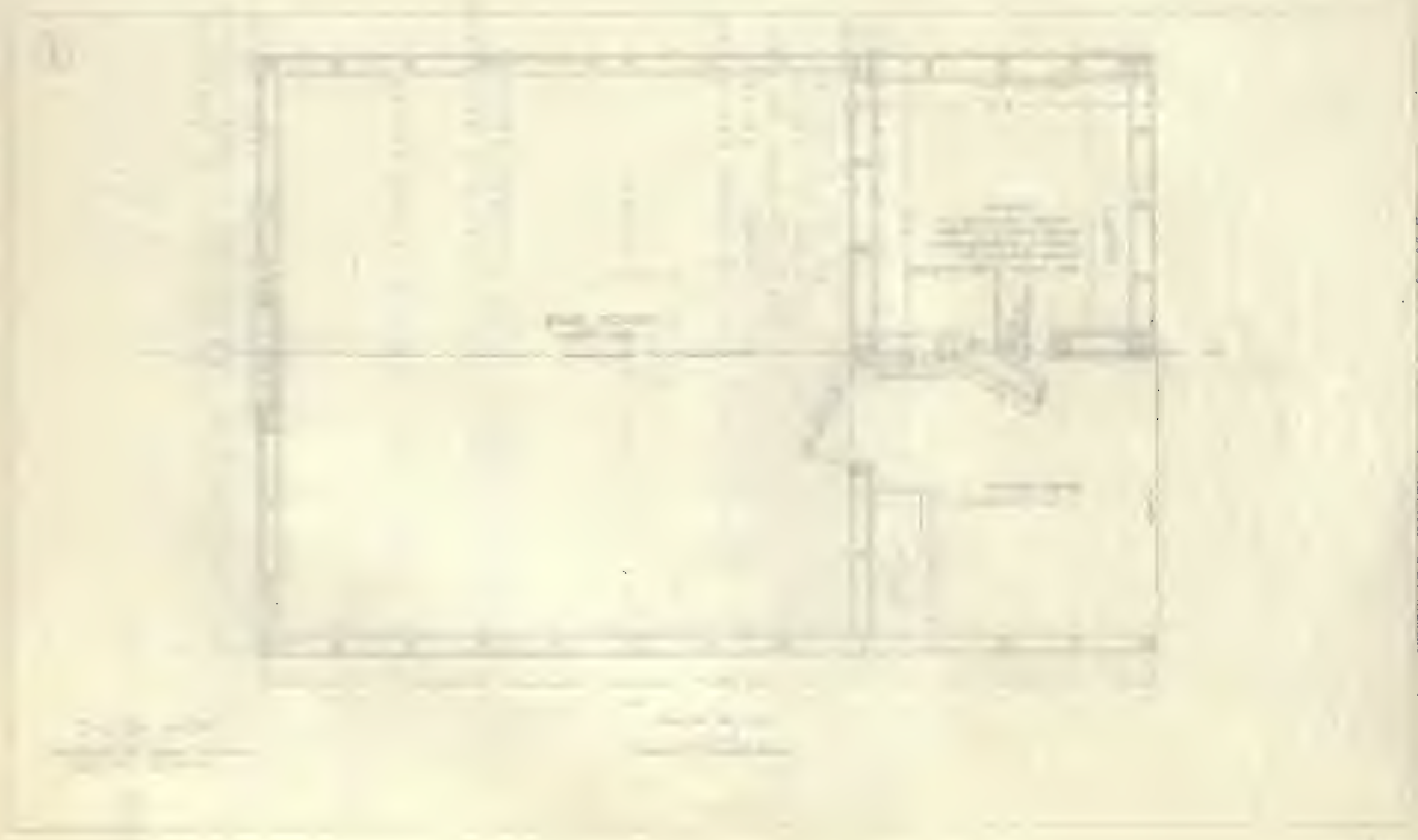
If the structural material is dry apply the first coat as soon as the siding and roof are placed. If the lumber and roofing are not dry, apply paint as soon as the condition of the lumber will permit. Put on the second coat as soon as the first coat is dry. Do not paint if lumber is not thoroughly dry or if the surface is damp from rains, fog, frost, etc. Do not paint during damp weather. See the Paint Section of the Circular.

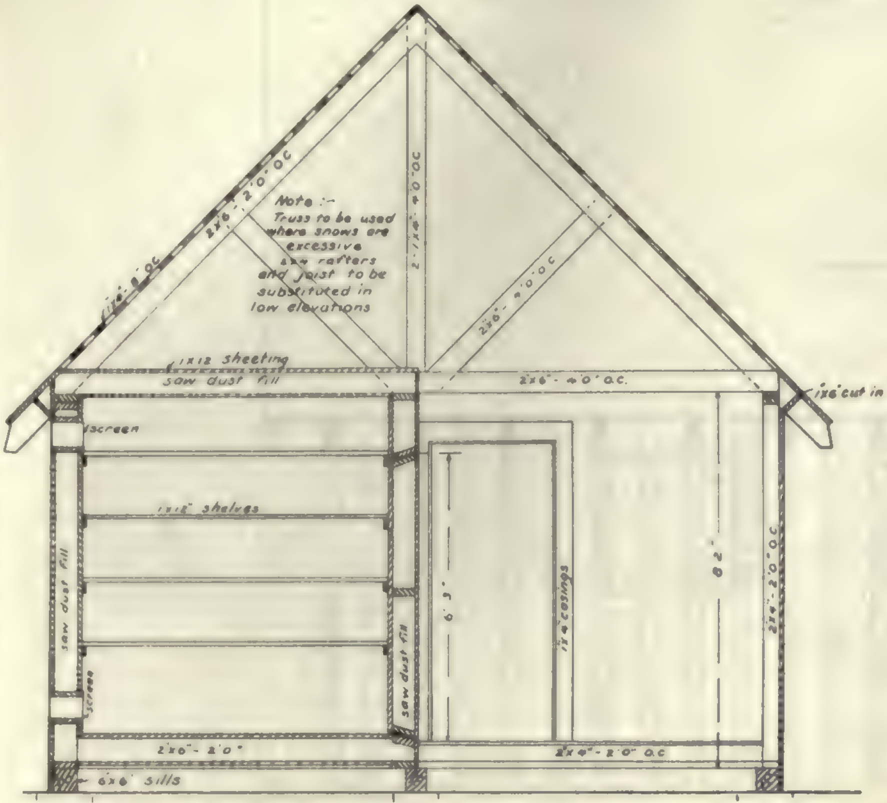
1/3



FLOOR PLAN
Scale

PLAN NO. 3-C
WOOD SHED & COOLER
U.S. Forest Service





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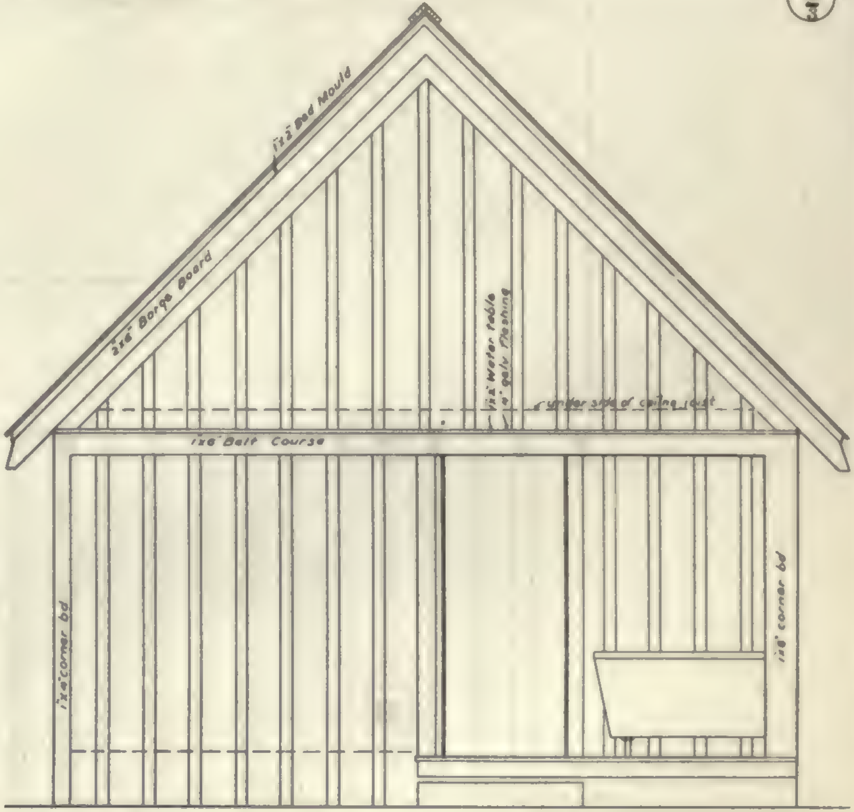

ELEVATION

PLAN NO. 3-C

WOOD SHED and COOLER

U.S. Forest Service

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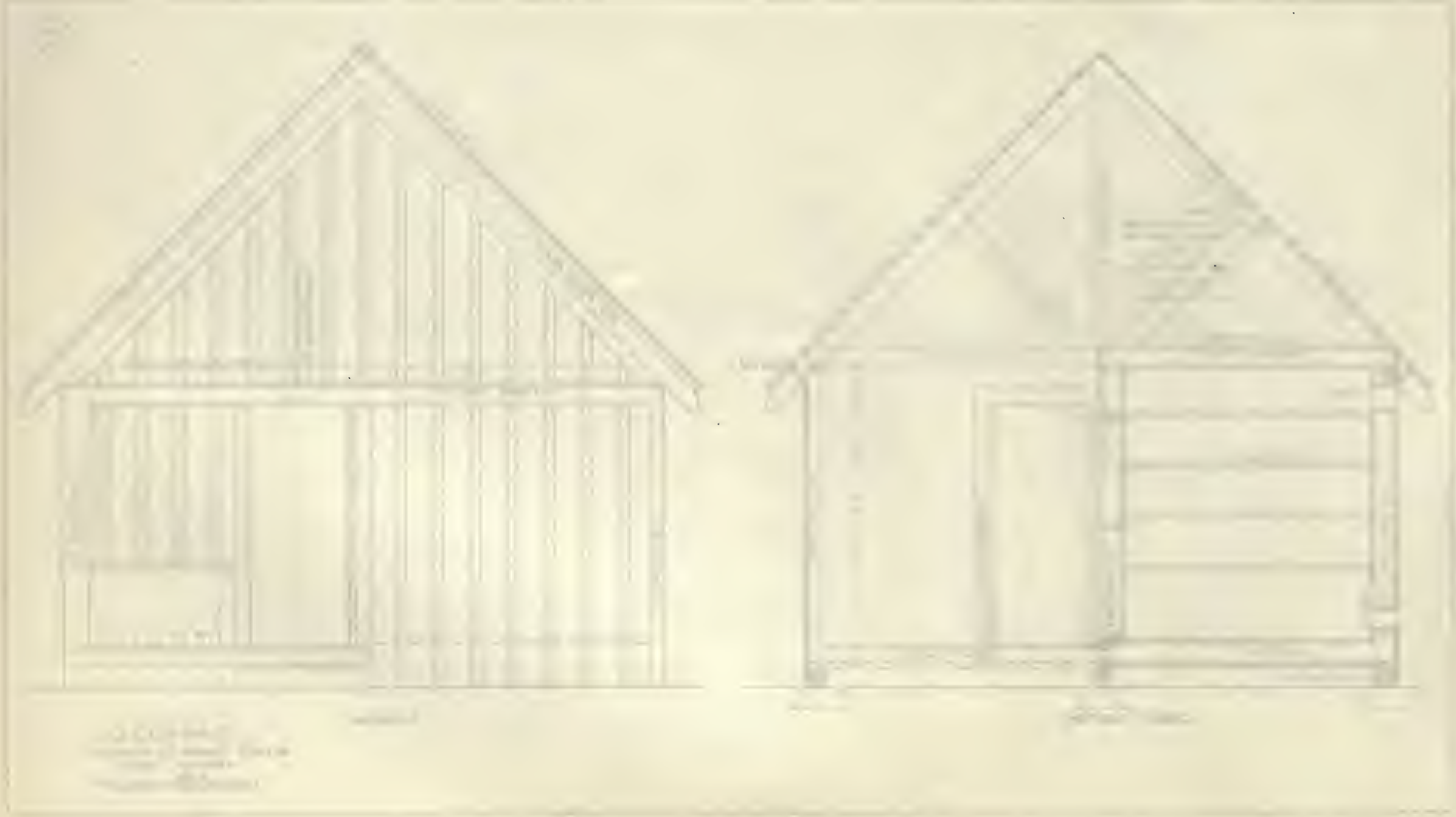

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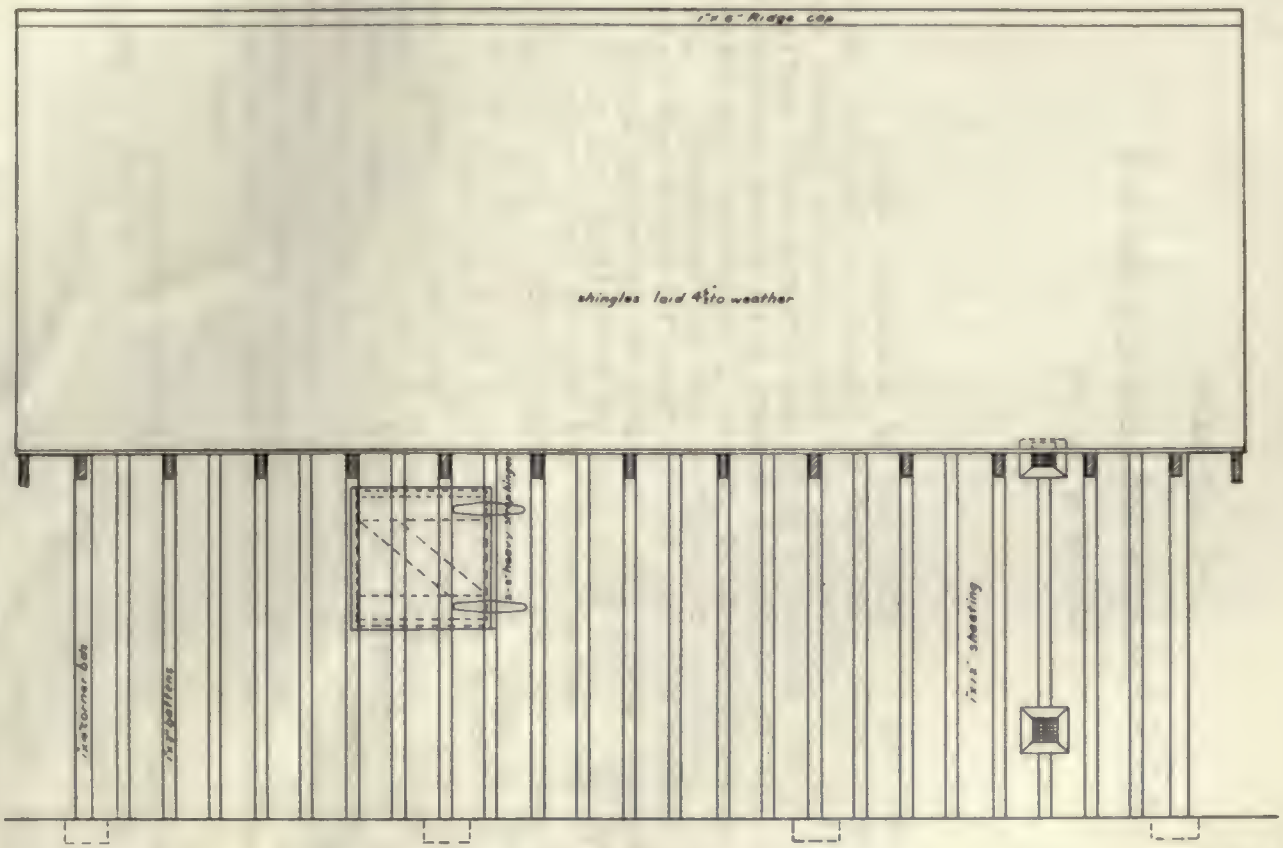

SIDE ELEVATION

PLAN NO. 3-C
WOOD SHED & COOLER
U.S. Forest Service
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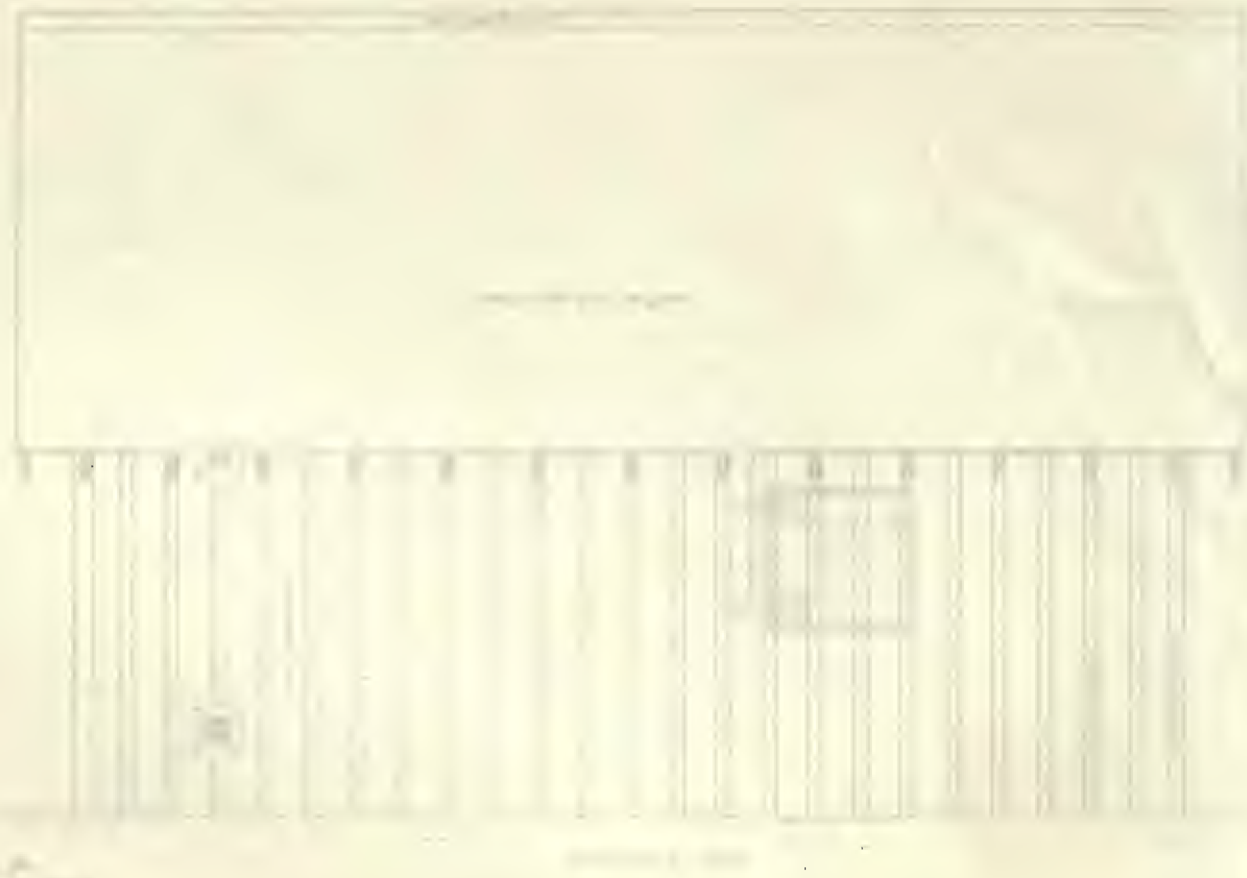


PLAN NO. 3-C

WOODSHED AND COOLER

16' 0" x 24' 0"

Items preceded by the mark (*) are standard and are not subject to change or choice. Conditions of the local lumber markets, and the isolation of certain building sites from markets carrying a varied stock of lumber are factors which will govern selection of the type of outside and inside wall cover, trim and sizes and kinds of nails. Elevation of the particular building site will determine the slope of roof to use and the dimensions of the roof frame material to order. All items subject to change or choice are indicated by the mark (#). To prepare a complete order list, select the items marked (#) which, under the particular circumstances, will be best adapted for use at a given building site. Add such items to those marked (*). To all items of lumber add the specifications shown under "Grade and Species" and "Finish". For example, two pieces 4"x 6"- 16' No. 1 Common, redwood, cedar, Douglas fir or pine, rough. To all items of hardware add only such descriptive matter as is necessary to adequately describe each item. For example, 2 pounds 30d. common wire nails - 3 pounds 30d. fine galvanized wire nails. Do not show on the order list the purpose for which the hardware items are to be used.

Estimated cost of construction - labor at $4.00 per day - $72.00.

Builder's List of Material

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
	Sills and Girder.				
* 4	6 x 6 - 12	Sills	(1st choice H. C. or RW.	Rough	144
* 2	6 x 6 - 16	"	(2nd " D.F., W.F., R.F.	"	96
* 1	6 x 6 - 16	Girder	(3rd " Y. P.	"	48
	6 x 6	Underpinning - Amounts needed will depend upon slope of building site. Builder shall make list of underpinning needed.			
	Studs, Plates, Joist, Etc.				
*22	2 x 4 - 16	Stud	No. 1 Common, any species	"	235
*12	2 x 4 - 16	Plates	" " " "	"	128
* 4	2 x 4 - 16	Door & window trimmers	" " " "	"	43
* 4	2 x 4 - 16	Girt	" " " "	"	43
*12	2 x 6 - 16	Studs for cooler	" " " "	"	192
* 5	2 x 6 - 16	Plates " "	" " " "	"	80
* 4	2 x 6 - 16	Joist " "	" " " "	"	64
* 3	2 x 4 - 16	" " porch	" " " "	"	32

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
	Sheeting, Floor, Walls, Etc.				
* 9	1 x 12 - 16	Flooring	No. 1 Common, any species	Rough	144
* 5	1 x 12 - 16	Top cover over cooler	" " " "	"	80
* 9	5/8x3 - 16	Battens under floor	" " " "	"	36
#380	B.F. - -	Inside lining of cooler	No. "C" California or No.2 Oregon shiplap 8" wide (1st choice)	"	375
		or			
#21	1 x 12 - 14	Inside lining of cooler)	Any species (2nd choice)		294
#24	5/8x 3 - 14	Battens	)	"	56
	Outside Wall Cover				
Style A.					
#40	1 x 12 - 18	Side and end walls	" " " "	"	720
# 8	1 x 12 - 16	Gable ends	" " " "	"	128
#840	Lin.Ft. 1 x 4	Battens	" " " "	"	280
* 90	" " 1 x 3	"	" " " "	"	23
	or				
Style B.					
# 6	1 x 4 - 12	Belt course	" " " "	"	24
#72	Lin.Ft. 1 x 4	Water table	" " " "	"	24
#16	1 x 12 - 16	Base	" " " "	"	256
#350	Lin.Ft. 1 x 3	Battens	" " " "	"	90
#	1 x 8	Horizontal siding 6" to weather	" " " "	"	645
	or				

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
Style C.					
# 6	1 x 4 - 12	Belt course	No. 1 Common, any species	S1S	24
#72	Lin.Ft. 1 x 4	Water table	" " " "	S1S1E	24
#16	1 x 12 - 16	Base	" " " "	Rough	256
#350	Lin.Ft. 1 x 3	Battens	" " " "	"	90
#	8"	Rustic or drop siding	No. "C" Grade Calif. " No. 3 Clear Oregon, D. F.		645
* 4	1 x 4 - 18	Corner boards	No. 1 Common, any species	Rough or S1S2E	24
* 1	1 x 8 - 12	" "	" " " "	S1S or rough	8
* 2	1 x 6 - 16	Belt course or	" " " "	S1S	16
Style D.					
#425	B.F. 1 x 4	Sheeting 8" O.C.	No. 2 Common, any species	Rough	425
# 6500	- - -	Shingles 4½" to weather	Star A Star red cedar		
		Roof Frame 1/3 Pitch (For elevations up to 2000 feet) 18" Projection			
#26	2 x 4 - 12	Rafters	No. 1 Common, any species	Rough	208
# 4	2 x 6 - 12	Barge boards	" " " "	S4S or "	48
# 4	1 x 2 - 12	Bed mould	" " " "	" " "	8
# 4	1 x 10 - 12	Gable end frieze	" " " "	S1S " "	24
# 4	1 x 6 - 12	Rafter " "	" " " "	S1S " "	16
# 3	1 x 6 - 16	Collar beams	" " " "	Rough	24
# 5	1 x 6 - 16	Ceiling joist	" " " "	"	40
# 4	1 x 12 - 12	Soffit	" " " "	S1S or "	48

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
		Roof Frame 1/3 Pitch (For elevation between 2000 and 3500 feet) 18" Projection			
#26	2 x 6 - 12	Rafters	No. 1 Common, any species	Rough	208
# 4	2 x 6 - 12	Barge boards	" " " "	S4S or""	48
# 4	1 x 2 - 12	Barge trim	" " " "	" " "	8
# 4	1 x 10 - 12	Gable end frieze	" " " "	S1S or "	40
# 4	1 x 6 - 12	Rafter " "	" " " "	" " "	24
# 2	1 x 6 - 16	Collar beams	" " " "	Rough	16
# 6	1 x 6 - 12	Angle struts	" " " "	"	72
# 6	1 x 4 - 16	King struts	" " " "	"	32
# 5	2 x 6 - 16	Ceiling joist 4' C.	" " " "	"	64
# 4	1 x 12 - 16	Soffit	" " " "	S1S or "	64
		Roof Frame 1/2 Pitch (For elevations over 3500 feet). 16" Projection			
#26	2 x 6 - 14	Rafters	No. 1 Common, any species	Rough	364
# 4	2 x 6 - 14	Barge boards	" " " "	S4S or "	56
# 4	1 x 12 - 12	Barge trim	" " " "	" " "	10
# 4	1 x 10 - 12	Gable end frieze	" " " "	S1S " "	40
# 4	1 x 6 - 12	Rafter " "	" " " "	" " "	24
# 6	2 x 6 - 16	Collar beam	" " " "	Rough	96
#12	2 x 6 - 12	Angle struts	" " " "	"	144
# 6	1 x 6 - 16	King struts	" " " "	"	96
#11	2 x 6 - 16	Ceiling joist over 16'span	" " "	"	178
# 4	1 x 12 - 16	Soffit	" " " "	S1S or "	64

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
	Roof Cover.				
* 4	1 x 12 - 14	Rafter end sheeting	No. 1 Common, any species	S1S or rough	56
* 4	1 x 6 - 14	" " "	" " " "	S1S or rough	28
#	1 x 4	Sheeting 8" O.C.	No. 2 " " "	Rough	325
# 5250	- -	Shingles 4½" to weather or	Star A Star red cedar		
* 4	1 x 8 - 14	Ridge boards	No. 1 Common, any species	"	38

If shakes are to be used, see Shake Table No. B.M.-2 for amount of materials.

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
	Doors, Windows, Shelves, Etc.				
3	1 x 6 - 18	Door and window frame	No. 2 Common, any species	S1S or rough	27
8	1 x 12 - 14	Shelves	" " " "	" "	112
1	2 x 8 - 4	Window sill	" " " "	"	6
2	½ x 1½ - 12	Door stop	" " " "	"	3
	Mill Order List				
# 1	2'8" x 6'8"	5-cross panel door			
1	2'6" x 2'6"	Single sash			

Hardware List

5#	8d Casing nails for trim
#18#	3d.Fine galv. iron shingle nails if shingle wall is used
*10#	8d Common nails
#30#	10d " " if rough board siding is used
#40#	8d Casing " " rustic, etc. is used
#24#	3d Fine shingle nails for shingle siding
*50#	10d Common nails for frame
*20#	20d. " " " "
* 5#	30d. " " " "
1 Pr.	- 3½ half surface butts A.C. for door
1 "	- 2 x 2 steel loose pin butts for window
1	- - - Rim latch
1	- - - Refrigerator fastener No. 4, Pac.Hdw. Cat.
3	- - - 10" heavy strap hinges with screw for refrigerator

Sawdust

150 Cu.ft. sawdust for voids in cooler

Paint

* 5	gal.	Standard outside wall paint
* 4	"	" roof paint
* 1	"	Outside white for trim
# 1	"	Linseed oil
# ¼	"	Turpentine

If Laird & Sinclair paint is used, eliminate linseed oil and turpentine and add

# 1 gal. Aroturps to each 5 gallons of paint on list.

SPECIFICATIONS

FOR

WOODSHED AND COOLER

16'm0" x 24' 0"

This building, for general use, is intended to be built on to dwellings in such position as to bring the open porch opposite the back door of the dwelling. In this position the open porch then serves as a back porch for the dwelling and an entrance to the woodshed and cooler. This arrangement will provide for all the above being under one roof. If desirable, a bench to accommodate laundry tubs may be built at a chosen position on the open porch. If the position of the cooler and open porch are not right for use in connection with a given building, their respective positions may be switched to fit.

These specifications are intended to embrace all material necessary in the erection and completion of the building in all its parts, and to furnish such instructions as appear necessary to give the builder a general idea of the plan. Variations due to different locations and accessibility of lumber markets have been considered and estimates prepared.

The general plan as regards construction of frame and other vital parts of the structure is to be followed unless permission to deviate from the plans and specifications has first been secured from the District Forester. Deviation from the floor plan and other changes of minor consequence, however, to take care of unforeseen local conditions and circumstances, may be made by the builder. If the building is "hipped" on to another, additional material not included in the "Material List" will be needed. The builder should provide it.

EXCAVATION.

Excavation for the foundation of the building shall be carried down to solid earth. The bottom of the excavation shall be level and smooth. When necessary to grade into unlevel ground for the purpose of providing a level building site, the slopes of the excavations resulting must clear the sides of the building by at least 3 feet. If necessary, provision should be made to prevent earth caving from the embankment from contacting with the sills. If posts are of wood, they too should be protected.

FOUNDATION.

Do not place foundation blocks or underpinning further apart than 6 inches on center. Where snow loads are excessive or where the ground is not firm, place the foundation blocks or underpinning on 4 foot centers under all outside sills and on 6 foot centers under all interior sills.

Foundations should be either of -

(a) 6" x 6" heart cedar, redwood or Douglas fir underpinning, set upon substantial flat stones of sufficient thickness to project at least 4 inches above the ground. Wood blocks should never be used for footings under foundation posts.

(b) If substantial stones are not available, a masonry footing should be provided. For masonry use only hard stones, preferably flat ones. All should be carefully imbedded on their broadest faces in mortar of 1 part cement and 2 parts coarse, clean, sharp sand. Each layer should be well filled and flushed up on both sides and firmly bonded together. The tops should be made level to receive the underpinning. See Table No. C-4.

(c) Large stones of sufficient thickness to raise the sill to a height of at least 12 inches above the ground.

(d) Blocks of masonry or concrete at least 12 inches high, 10 inches wide on top and 16 inches square at the bottom. The top of concrete and masonry blocks should be made level to receive the sills. See Concrete Section and Table No. C-4.

MATERIALS.

All structural material should conform as closely as possible to the specifications given in the builder's list and lumber order list. That minor deviations must sometimes be made is recognized as unavoidable.

SILLS.

Should preferably be of cedar or redwood. Douglas fir may be used as a second choice.

Sills at corner should be halved together. When two or more pieces are necessary to form the total length of sill a splice should be made on the foundation supports, as indicated on the plan (see Cut No. B.M.9)

Two or more joints should not occur on the same line of foundation posts. Arrange to have the splices made over foundation posts of different sets.

FLOOR JOISTS, STUDDING, BRIDGING, ETC.

Floor joists should be of selected sticks, straight grain and free from all knots larger than 1 inch in diameter; 1st choice being Douglas fir, 2nd choice white fir, 3rd choice yellow pine. Studding, headers, trimmers, plates, etc., may be of any straight grain material free from loose knots and knots which materially weaken the stick. Lay floor joists directly upon the sills. Where two joists form the span, use the lap joint; in all cases place the bow of the joists up. Place solid 2" x 6" bridging at the ends of each joist.

Floor joists shall be placed under cooler and porch. The woodshed section shall be without floor.

Corner studs should be 3 - 2" x 4" spiked together. The plan indicates methods of placing studs. Make the corner post of 2" x 4" spiked together. Assemble the posts before installing them.

Toe nail the studs to the sill and spike the floor joist to the studs or vice versa.

Lap top plates at corners and in splicing top plates lap them 4 feet and arrange to have the end of the lap rest upon the studding. Nail plate to studs with 20d. nails.

Headers over window openings and door openings should be double

Wall girts of 2" x 4" scantling should be placed horizontally in all outside walls midway between the top and bottom plates. If water table is used a girt should be placed just below table to give nailing foundation for siding under water table. In such cases the wall girt should be placed midway between the water table and top plate.

Place ceiling joists directly over plates. Nail them securely to the rafters and toe nail them to the plate. If the building will be subject to snow load for ceiling joists, give particular care to the selection of good straight grain sticks free from knots larger than 1 inch in diameter and other imperfections that would weaken the stick. Use five 20d. wire nails for nailing the ceiling joist to the rafters and two 20d. wire nails to toe nail them to the plate.

ROOF.

Materials for roofs of different pitches are provided. At elevations within the respective ranges use the roofs of stated pitches. Exception to the above should occur only where snowfall is not a source of hazard as on some of the southern Forests and on the Modoc.

Where roof trusses are used fasten the members securely with 10d. nails in members 1 inch thick and with 20d. nails in members 2 inches thick.

Rafters and other members of the roof frame should be of selected straight grain lumber; first choice Douglas fir, second choice white fir, third choice yellow pine, free from knots and other imperfections. Too much attention can not be given to the selection of the best sticks of the lumber order for rafters.

Care should be taken to cut the rafters true in order that they rest firmly on the plate, meet squarely at the apex of the roof.

Eave projections should be sheeted solid with 1" x 12" rough lumber.

Rafter ends should be finished in the manner illustrated by the diagram "Section".

Use for roof covering either -

(1) Star A Star red cedar or redwood shingles

(2) Shakes of white fir or sugar pine

(3) Lay shingles 4½ inches to weather on sheeting 8 inches on center. Nail them with 3d. fine galvanized shingle nails. Lay the bottom course of shingles double and project it 1½ inches beyond the sheeting. Allow a 1 inch projection of shingles over the barge board trim. Table No. B.M.-2 gives data on shakes. If shakes are used allow 1½ inches projection at eaves and 1 inch projection over barge board trim.

The ridge of the roof should be finished with 1" x 6".

SIDING.

As available and as desirability of having siding and method of placing it correspond with the outside cover of the building to which this building will be attached, the builder may choose the style of siding. If this building is to be placed in connection with a dwelling of this circular, the method of placing siding of various kinds with water table and belt course shall correspond to that of the dwelling. Material for this purpose is included in the Material List as Style B - C - D. If the building is to be attached to a house already erected, the style of siding chosen may be the same as that of the house. If this is done a list of siding to correspond will have to be worked up by the builder, except in case of rough lumber. The Material List includes material for plain rough board and batten siding. See Style D.

Place siding listed as follows:

(a) Rough lumber 1" x 12" and 1" x 3" battens placed vertically. Material should be free of loose knots and all knots of a diameter greater than 1½ inches and free from weather check, rot disfigurements and large pitch pockets that naturally affect the soundness of the stick. Nail the board securely to the sills, girts, plates and studs with 3 - 10d. nails at each member named. Fasten battens with 6d. wire nails placing 2 at each end and 1 on each side of the battens approximately 18 inches apart throughout the length of the batten. Clinch on the inside all projecting nails. This style of siding shall be placed as shown on the plan.

(b) 1" x 8" siding of same specifications as (a) laid horizontally with a lap of 2 inches. Set the first board at the bottom on a 1" x 2" strip nailed to studs. Exercise care in spacing the siding in order that the lap will be equal on each board. Nail siding at top and bottom at each stud with a 10d. wire nail.

(c) Rustic, drop or bevel siding of "C" Grade California or No. 3 Grade Oregon. Nail siding with 2 - 8d. wire nails at each stud.

(d) Star A Star red cedar shingles placed 5 inches to weather on 1" x 4" sheeting on 8 inch centers. Nail shingles with 3d. fine galvanized nails.

Style B - C - D siding shall be placed as shown on Plans 1-A and 1-B.

In placing sheeting for shingle walls cut back the sheeting the width of the door and window casing. Before placing sheeting study the Detail 6-D showing door and window frames where shingles are used.

FLOOR.

Floor extends only under the cooler and over the open porch.

COOLER.

As the plan indicates the frame of the cooler is of 2" x 6" with rough board and batten exterior boarding and 1" x 8" shiplap interior finish. If shiplap is not available, substitute rough lumber as listed in the Material List. Finish all corners of cooler with 1" x 3" battens. Sawdust should be tamped between the walls, floor and ceiling. Provide vents as intended by the plan.

Shelves and bins may be built in the cooler to suit the builder. Material for this purpose has been included in the estimate.

DOOR AND WINDOW FRAMES.

Make door and window frames as shown on the plan.

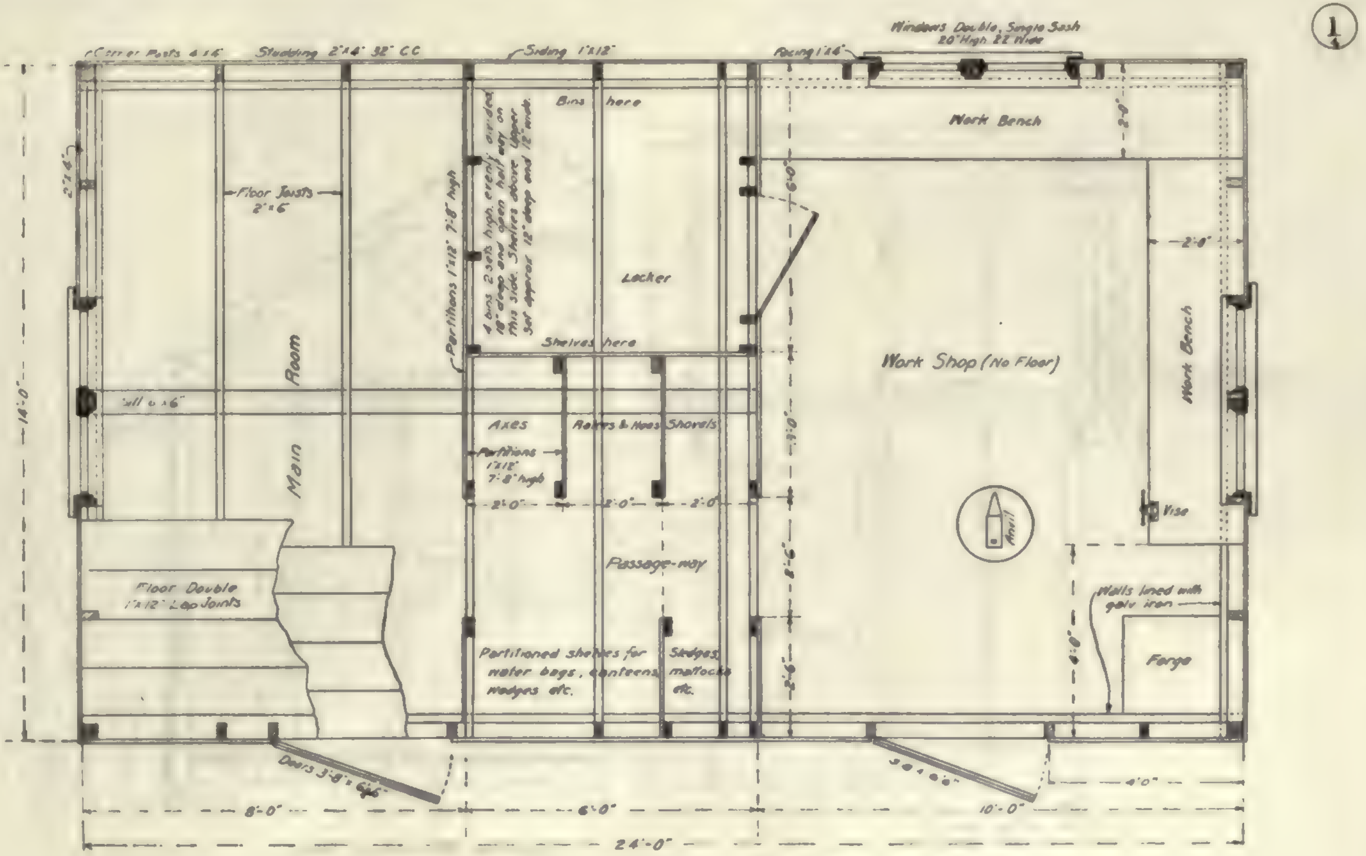
DOORS AND WINDOWS.

As shown on the plan the door for the cooler is to be made with double walls on 1" x 6" frame. Care should be taken to hang the door "high" since it will settle some after hanging. The door between the woodshed and the open porch may or may not be put in. The builder may choose. If used order the door as specified. Order windows as specified.

PAINTING.

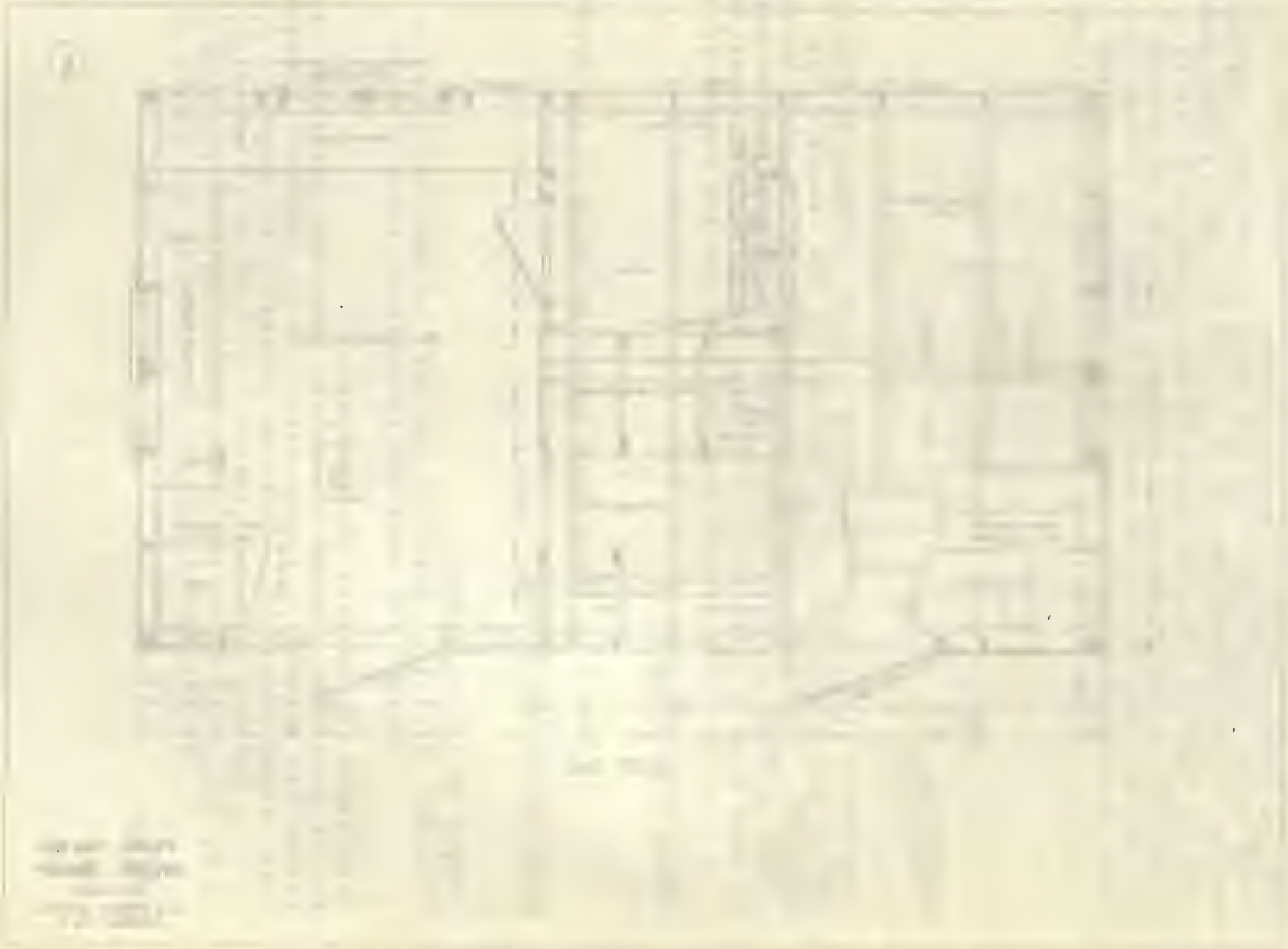
Color - Body - Standard gray, 2 coats
Roof - " green, 2 "
Trim - " white, 2 "

If the structural material is dry apply the first coat as soon as the siding and roof are placed. If the lumber and roofing are not dry, apply paint as soon as the condition of the lumber will permit. Put on the second coat as soon as the first coat is dry. Do not paint if lumber is not thoroughly dry or if the surface is damp from rains, fog, frost, etc. Do not paint during damp weather. See the Paint Section of the Circular.



FLOOR PLAN

PLAN No. 3D
WORK SHOP
14'0" X 24'0"
U. S. FOREST SERVICE
DISTRICT No. 5



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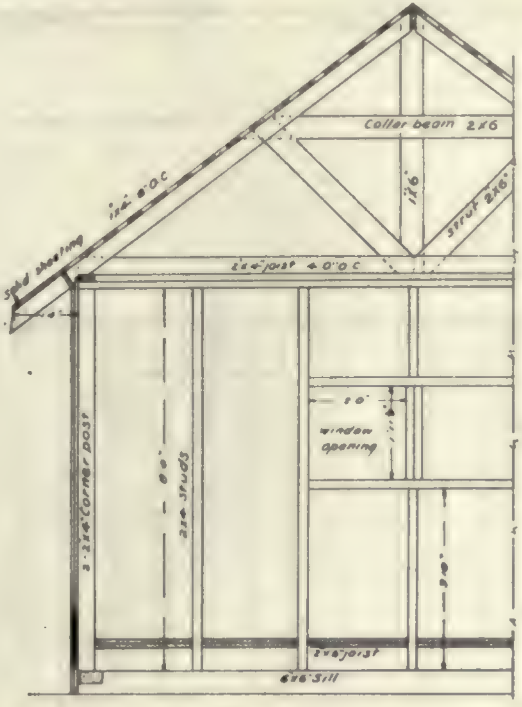
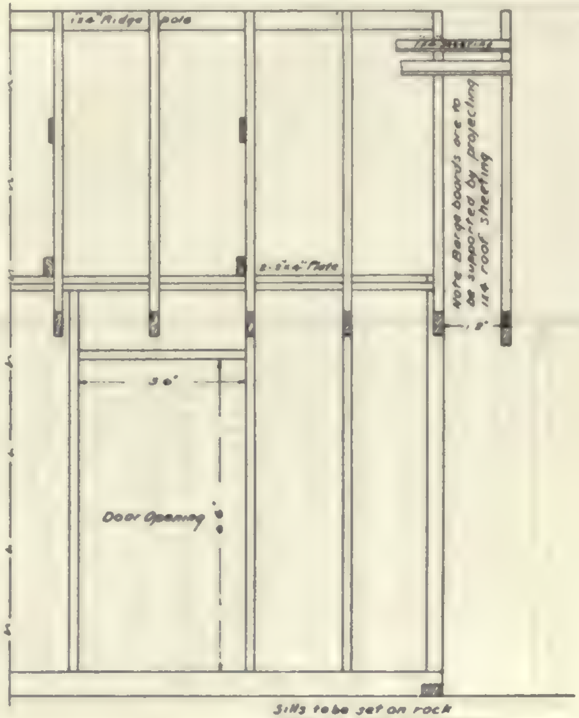


END ELEVATION OF FRAME

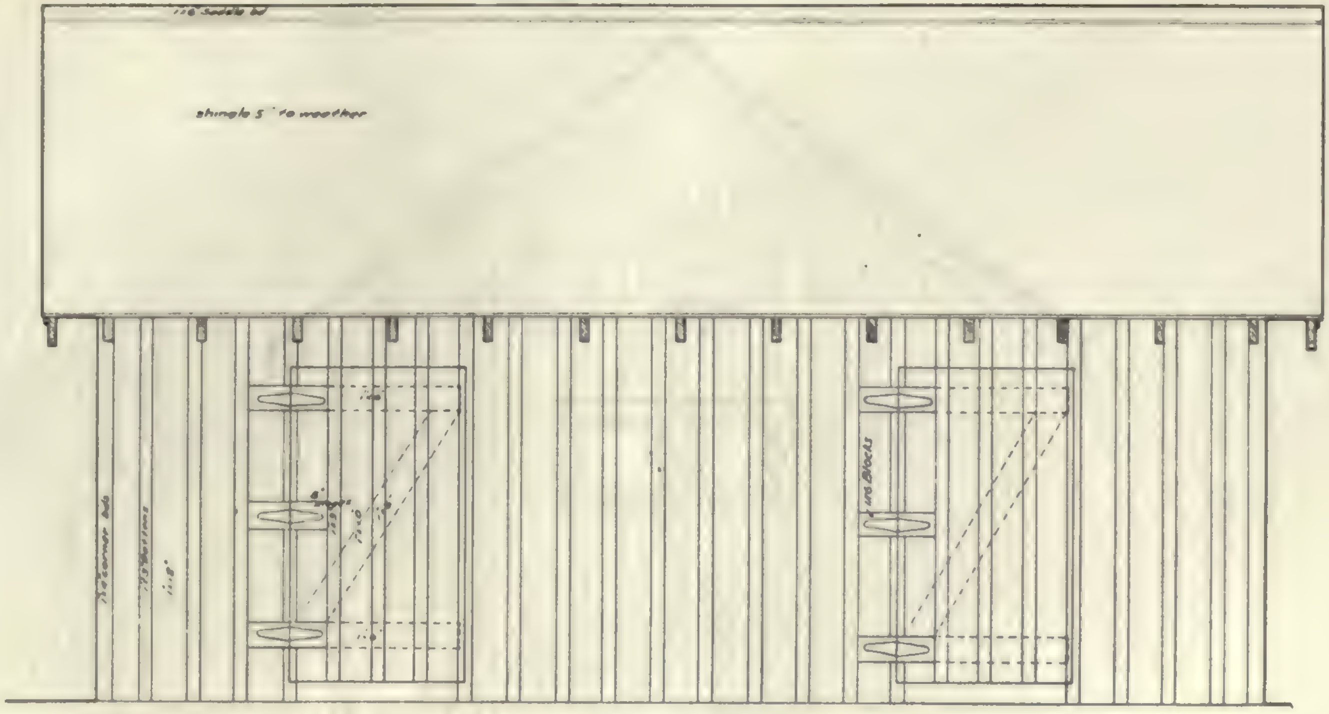

1x4" Ridge pole
2-2x4" Plate
Note Barge boards are to be supported by projecting 1x4 roof sheeting
1'8"
3'0"
Door Opening

Sills to be set on rock
piers not over 6'0" centers

SIDE ELEVATION OF FRAME

PLAN No. 3D
WORK SHOP
14'0"X24'0"
U. S. FOREST SERVICE
DISTRICT No. 5

③

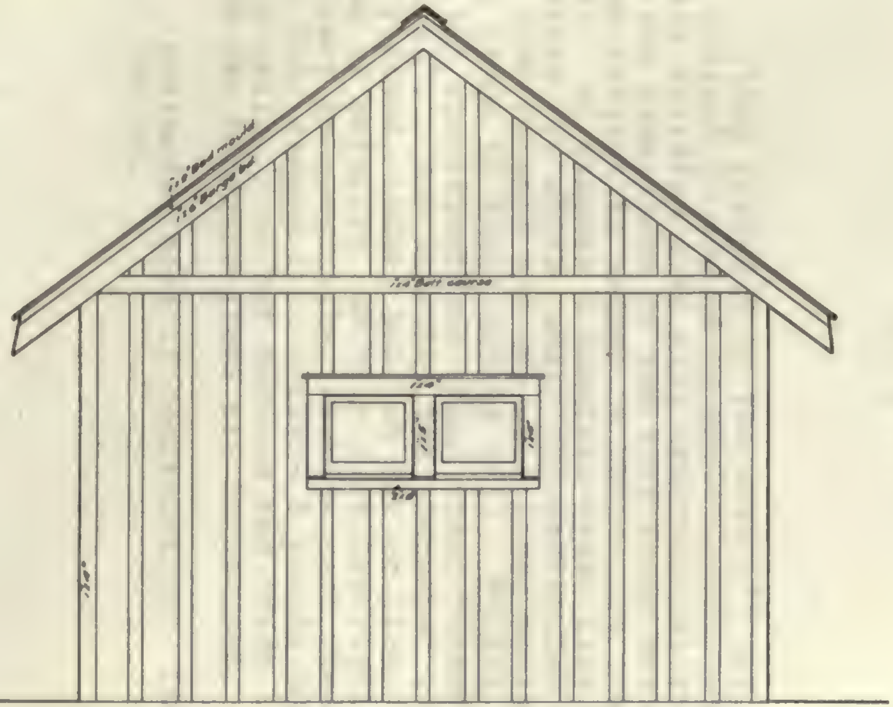


SIDE ELEVATION

Scale

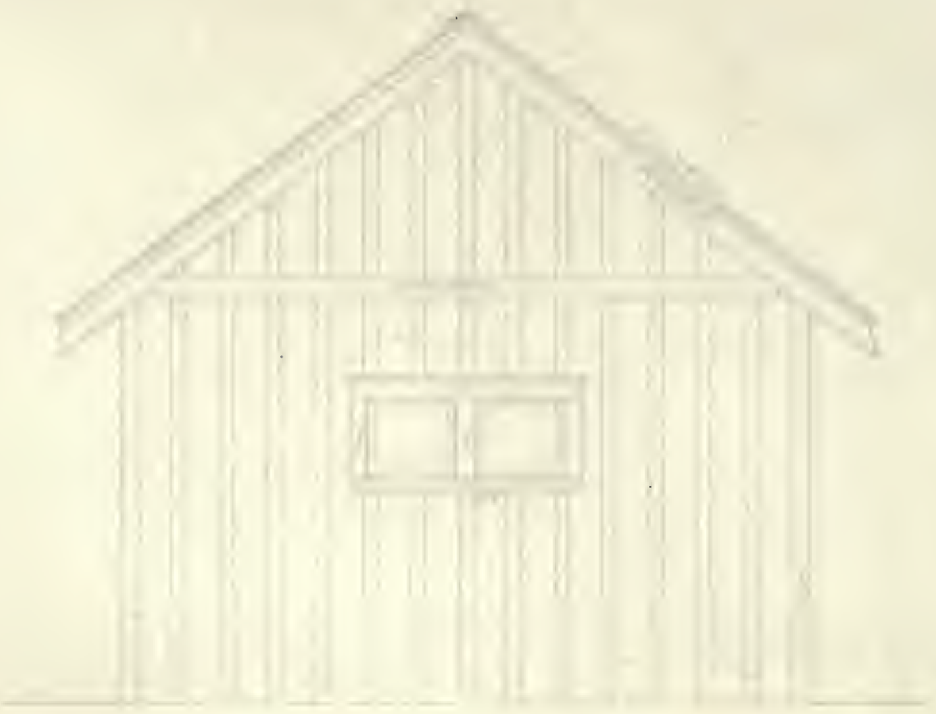
PLAN No. 3D
WORK SHOP
14'0" X 24'0"
U. S. FOREST SERVICE
DISTRICT No. 5

④



END ELEVATION
Scale

PLAN No. 3D
WORK SHOP
14'0" X 24'0"
U. S. FOREST SERVICE
DISTRICT No. 5



WORK SHOP

PLAN NO. 3-D

14' x 24'

Items preceded by the mark (*) are atandard and are not subject to change or choice. Elevation of the particular building site will determine slope of roof to use and the dimensions of the roof frame material to order. All items subject to change or choice are indicated by the mark (#). To prepare a complete order list, select the items marked (#) which, under the particular circumstances, will be best adapted for use at a given building site. Add such items to those marked (*). To all items of lumber add the specifications shown under "Grade and Species" and "Finish". For example, two pieces 4" x 6" - 16' No. 1 Common, redwood, cedar, Douglas fir or pine, rough. To all Items of hardware add only such descriptive matter as is necessary to adequately describe each item. For example, 2 pounds 30d. common wire nails - 3 pounds 30d. fine galvanized wire nails. Do not show on the order list the purpose for which the hardware items are to be used.

Estimated cost of construction - labor at $4.00 per day - $90.00.

Builder's List of Material

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
	Sills and Girders				
*4 -	6 x 6 - 12	Side Sills	1st Choice, H.C. or RW	Rough	144
*2 -	6 x 6 - 14	End "	2nd " D.F.,W.F. or R.F.	"	84
*1 -	6 x 6 - 14	Floor Girder	3rd " Y.P.	"	42
	Studs, Plates, Joists, Etc.				
*2 -	4 x 4 - 16	Studs, Corner Posts	No. 1 Common, any species	"	43
*20 -	2 x 4 - 16	Studs	" " " "	"	214
*8 -	2 x 4 - 12	Plates	" " " "	"	64
*4 -	2 x 4 - 14	"	" " " "	"	38
*5 -	2 x 4 - 16	Door and window trimmers	" " " "	"	54
*7 -	2 x 6 - 14	Floor joist	" " " "	"	98
	Sheeting, Floor, Walls, Etc.				
*	1 x 12	Double floor	No. 1 Common, any species	"	400
*38 -	1 x12 - 18	Side walls and gable	" " " "	"	684
*10 -	1 x12 - 16	" " " "	" " " "	"	160
*840 Lin.Ft.	1 x 3	Battens	" " " "	"	210
* 4 -	1 x 4 - 18	Corner boards	" " " "	"	24
* 2 -	1 x 4 - 14	Belt course	" " " "	"	9
*	1 x 12	Partitions	" " " "	"	275

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
	Roof, 1/3 Pitch (For elevations up to 2000 ft).				
#26	2 x 4 - 12	Rafters	(No.2 Clear, D. F. 1st Choice;	Rough	208
# 4	2 x 6 - 12	Barge boards	(" " W. F. 2nd " ;	"	48
# 4	1 x 2 - 12	Bed mould	(" " Y. PP. 3rd " ;	"	8
# 4	1 x 6 - 12	Gable end frieze	(any species.	"	24
# 4	1 x 4 - 12	Rafter end frieze		"	16
# 3	1 x 6 - 16	Collar beams	(No. 1 Common, any species for	"	24
# 6	2 x 4 - 14	Ceiling joist	(all items except Rafters)	"	56
	Roof, 1/3 Pitch (For elevations between 2000 and 3500 ft).				
#26	2 x 6 - 12	Rafters		Rough	312
# 4	2 x 6 - 12	Barge boards	(No.2 Clear D. F. 1st choice;	"	48
# 4	1 x 2 - 12	" trim	(" " W. F. 2nd " ;	"	8
# 4	1 x 6 - 12	Gable end frieze	(" " Y. P. 3rd choice;	"	24
# 4	1 x 6 - 12	Rafter end frieze	(any species.	"	24
# 6	2 x 6 - 16	Collar beams		"	96
#12	1 x 6 - 16	Angle struts		"	96
# 6	1 x 6 - 12	King struts		"	36
#12	2 x 6 - 14	Ceiling joist		"	168
# 4	1 x 6 - 16	Rafter angle ties			32
	Roof, 1/2 Pitch, 18" Projection (Elevations over 3500).				
#26	2 x 6 - 12	Rafters	(No. 2 Clear D. F. 1st choice;	Rough	312
# 4	2 x 6 - 12	Barge boards	(" " W. F. 2nd "	"	48
# 4	1 x 2 - 12	" trim	(" " Y. P. 3rd "	"	8
# 4	1 x 6 - 12	Gable end frieze	(any species.	"	24
# 4	1 x 6 - 12	Rafter end frieze		"	24
# 6	2 x 6 - 16	Collar beams		"	96
#12	2 x 6 - 16	Angle struts		"	192
# 6	1 x 6 - 12	King struts		"	36
#12	2 x 6 - 14	Ceiling joists		"	168
# 4	1 x 6 - 16	Rafter ties		"	32

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
	Roof Cover - 1/3 Pitch Roof				
* 4 -	1 x 12 - 14	Rafter end sheeting	No. 1 Common, any species	Rough	56
* 4 -	1 x 6 - 14	" " "	" " " "	"	28
* 8 -	1 x 8 - 12	Soffit	" " " "	"	64
#	1 x 4	Sheeting 8" O.C. for use with shingles	No. 2 " " "	"	270
# 4500	- -	Shingles, 1/3 Pitch roof 4½ inches to weather	Star A Star red cedar		
# 5000	- -	Shingles, 1/2 Pitch roof" 4½ inches to weather	" " " "		
# 4 -	1 x 8 - 14	Ridge boards	No. 1 Common, any species	"	28
		or			
# Shakes, see Shake Table No. B.M.-2 for number required per 100 square feet, amount of sheeting and amount of nails.					
		or			
#56 - -	6'0"	Galvanized corrugated 26-gauge roofing			
#	1 x 8	Nailing strips for use with corrugated foofing	No. 2 Common, any species	"	160
#28 Running feet - Plain galvanized ridge capping, 6" sides					
	Benches, Bins, Etc.				
* 1 -	2 x 12 - 18	Bench top	No. 1 Common, any species	S1S	36
* 1 -	2 x 8 - 18	" "	" " " "	"	24
* 1 -	1 x 12 - 18	" skirt	" " " "	"	18
* 2 -	2 x 4 - 12	" frame	" " " "	Rough	16
* 8 -	1 x 12 - 16	Bins	" " " "	"	128

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
Doors and Window Frames.					
* 6 -	1 x 6 - 16	Door braces	No. 1 Common, any species	Rough	40
* 1 -	2 x 8 - 16	Window sills	" " " "	"	22
* 2 -	1 x 12 - 12	" frame	" " " "	"	24
* 3 -	½ x 1½ - 12	" stops			5

Mill Order List

* 6 - 20" x 22" Single Sash

Hardware List.

* 4 Pcs. Corrugated Galvanized iron, 26-gauge, 8 feet long for lining around forge
#16# 3d. Fine galvanized iron nails for shingles
*10# 8d. Common nails
*120# 10d. " "
*20# 20d. " "
* 5# 30d. " "
* 4 Pr. 8" heavy strap hinges and screws
* 3 - - 8" hasps and staples
* 4 Pr. 2" x 2" solid pin butts with screws
# 5# 2d. Galvanized roofing nails) For use with corrugated iron roofing
# 3# Lead washers)

Paint.

*	5	Gal.	Standard outside wall paint
*	5	"	" roof paint
#	1	"	Outside white for trim
#	1	"	Linseed oil
#	$\frac{1}{4}$	"	Turpentine

If Laird & Sinclair paint is used, eliminate linseed oil and turpentine and add -

1 Gal. Aroturp to each 5 gallons of paint on list.

SPECIFICATIONS

FOR

WORK SHOP

PLAN NO. 3-D

These specifications are intended to embrace all material necessary in the erection and completion of the building in all its parts, and to furnish such instructions as appear necessary to give the builder a general idea of the plan. Variations due to different locations and accessibility of lumber markets have been considered and estimates prepared.

The general plan as regards construction of frame and other vital parts of the structure is to be followed unless permission to deviate from the plans and specifications has first been secured from the District Forester. Deviations of minor consequence, however, to take care of unforeseen local conditions and circumstances may be made by the builder.

EXCAVATION.

Excavation for the foundation of the building shall be carried down to solid earth. The bottom of the excavation shall be level and smooth. When necessary to grade into unlevel ground for the purpose of providing a level building site, the slopes of the excavations resulting must clear the sides of the building by at least 3 feet. If necessary, provision should be made to prevent earth caving from the embankment from contacting with the sills. If foundation posts are of wood, they too should be protected.

FOUNDATION.

Do not place foundation blocks or underpinning further apart than 7 feet on center. Where snow loads are excessive or the ground is not firm, place foundation blocks or underpinning on 4 foot center under all outside sills, on

6 foot centers under all exterior sills and girts. Where underpinning on short centers are necessary, add sufficient material to the lumber order list to provide for them.

Foundations should be either of -

(a) 6" x 6" heart cedar, redwood or Douglas fir underpinning, set upon substantial flat stones of sufficient thickness to project at least 4 inches above the ground. Wood blocks should never be used for footings under foundation posts.

(b) If substantial stones are not available, a masonry footing should be provided. For masonry use only hard stones, preferably flat ones. All should be carefully imbedded on their broadest faces in mortar of 1 part cement and 2 parts coarse, clean, sharp sand. Each layer should be well filled and flushed up on both sides and firmly bonded together. The tops should be made level to receive the underpinning. See Table No. C-4.

(c) Large stones of sufficient thickness to raise the sill to a height of at least 12 inches above the ground.

(d) Blocks of masonry or concrete at least 12 inches high, 10 inches wide on top and 16 inches square at the bottom. The top of concrete and masonry blocks should be made level to receive the sills. See Concrete Section and Table No. C-4.

MATERIALS.

All structural materials should conform as closely as possible to the specifications given in the builder's list and lumber order list. That minor deviations must sometimes be made is recognized as unavoidable.

SILLS.

Should preferably be of cedar or redwood. Douglas fir may be used as a second choice.

Rectangular sills should be laid with the narrow face up.

Sills at corner should be halved together. When two pr more pieces are necessary to form the total length of sill a splice should be made on the foundation supports, as indicated on the plan (see Cut B.M. No. 9).

Two or more joints should not occur on the same line of foundation posts. Arrange to have the splices made over foundation posts of different sets.

FLOOR JOISTS, STUDDING, BRIDGING, ETC.

Floor joists should be of selected sticks, straight grain and free from all knots larger than 1 inch in diameter; first choice being Douglas fir, second choice white fir, third choice yellow pine. Studding, headers, trimmers, plates, etc., may be of any straight grain material free from loose knots which materially weaken the stick. Lay floor joists directly upon the sills. Where two joists form the span, use the lap joint; in all cases place the bow of the joists up. Place solid 2" x 6" bridging at the ends of each joist.

Corner studs should be 2 - 4" x 4" spiked together. The plan indicates methods of placing studs.

Headers over window openings and door openings should be double. If shingle siding is used double trimmers also.

Wall girts of 2" x 4" scantling should be placed horizontally in all outside walls midway between the top and bottom plates. If water table is used, a girt should be placed just below table to give nailing foundation for siding under water table. In such cases the wall girt should be placed midway between the water table and top plate.

Place ceiling joists directly over plates. Nail them securely to the rafters and toe nail them to the plate. If the building will be subject to snow load for ceiling joists, give particular care to the selection of good straight grain sticks free from knots larger than 1 inch in diameter and other imperfections that would weaken the stick. Use five 20d. wire nails for nailing the ceiling joist to the rafters and two 20d. wire nails to t toe nail them to the plate.

ROOF.

Materials for roofs of different pitches are provided. At elevations within the respective ranges use the roofs of stated pitches. Exception to the above should occur only where snowfall is not a source of hazard as on some of the southern Forests and on the Modoc.

Where roof trusses are used fasten the members securely with 10d. nails in members 1 inch thick and with 20d. nails in members 2 inches thick.

Rafters and other members of the roof frame should be of selected straight grain lumber; first choice Douglas fir, second choice white fir, third choice yellow pine, free from knots and other imperfections. Too much attention cannot be given to the selection of the best sticks of the lumber order for rafters.

The roof is to be sheeted with 1" x 4" sheeting laid 8 inches to weather, projecting the sheeting over gable ends to outside of barge boards.

Place barge boards as shown in the plans.

Care should be taken to cut the rafters true in order that they rest firmly on the plate, meet squarely at the apex of the roof.

Rafter ends over eave projections shall be sheeted solid with 1" x 12" lumber. Rafter ends shall be trimmed as shown in diagram.

Gable end projection should be finished by planting soffit boards on under side of the projected 1" x 4" sheeting.

Rafter ends should be finished in the manner illustrated by the diagram "Section".

Use for roof covering either -

(1) Star A Star red cedar or redwood shingles

(2) Shakes of white fir or sugar pine.

(3) Galvanized iron (see B.M. Page 8).

(4) Lay shingles 4½ inches to weather on sheeting 8 inches on center. Nail them with 3d. fine galvanized shingle nails. Lay the bottom course of shingles double and project it 1½ inches beyond the sheeting. Allow a 1 inch projection of shingles over the barge board trim. Table No. B.M.-2 gives data on shakes. If shakes are used allow 1½ inches projection at eaves and 1 inch projection over barge board trim.

The ridge of the roof should be finished with 1" x 6" excepting in cases where galvanized iron roofing is used. With it, use galvanized ridge capping.

SIDING.

Siding shall be of rough lumber 1" x 12" and 1" x 3" battens placed vertically. Material should be free of loose knots and all knots of a diameter greater than 1½ inches and free from weather check rot disfigurements and large pitch pockets that naturally affect the soundness of the stick. Nail the board securely to the sills, girts, plates and studs with three 10d. nails at each member named. Fasten battens with 6d. wire nails placing 2 at each end and 1 on each side of the battens approximately 18 inches apart throughout the length of the batten. Clinch on the inside all projecting nails. This style of siding shall be placed as shown on the plan.

DOORS. AND WINDOWS.

Doors should be made of boards and battens over 1" x 6" braces. Windows should be installed as shown in the drawing. Windows in the work shop should be hinged with 2" loose pin butts.

BARGE BOARDS.

Barge boards shall be placed as shown in diagram.

FLOOR.

Floor in the store room section shall be of 1" x 12" double with joints broken over cracks. No floor shall be placed in the work shop section.

INSIDE FINISH.

Install work benches as shown in the drawings. Care should be taken to have the edges of the benches straight and true.

Tool racks and locker should be placed as shown in drawing.

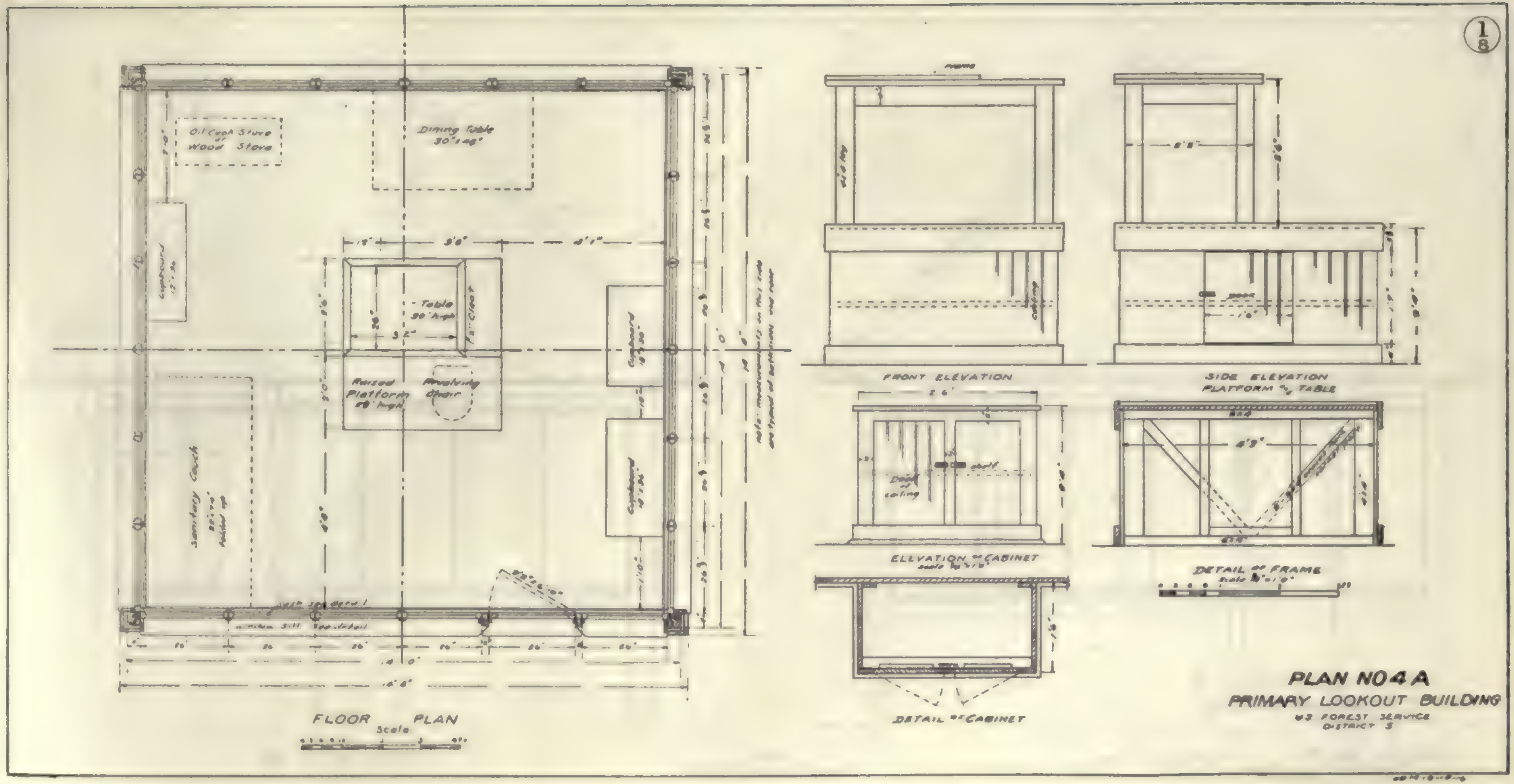
Shelves and bins in the locker may be arranged to suit the builder.

A lining of 26 gauge galvanized iron should be placed around the forge as shown in the diagram.

PAINTING.

Color - Body - Standard Gray, 2 Coats
Roof - " Green 2 "
Trim - " White 2 "

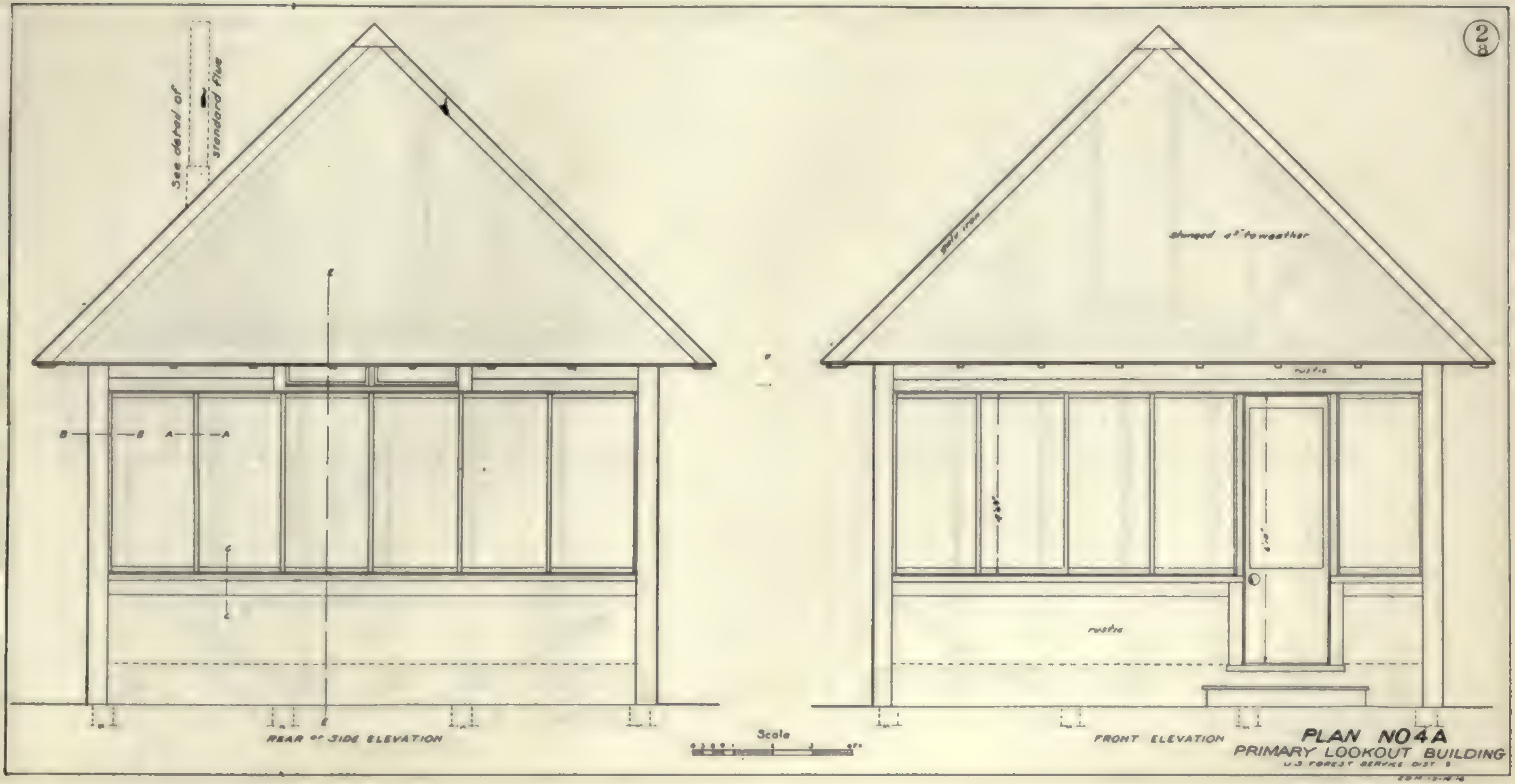
If the structural material is dry apply the first coat as soon as the siding and roof are placed. If the lumber and roofing are not dry, apply paint as soon as the condition of the lumber will permit. Put on the second coat as soon as the first coat is dry. Do not paint if lumber is not thoroughly dry or if the surface is damp from rains, fog, frost, etc. Do not paint during damp weather. See the Paint Section of the Circular.

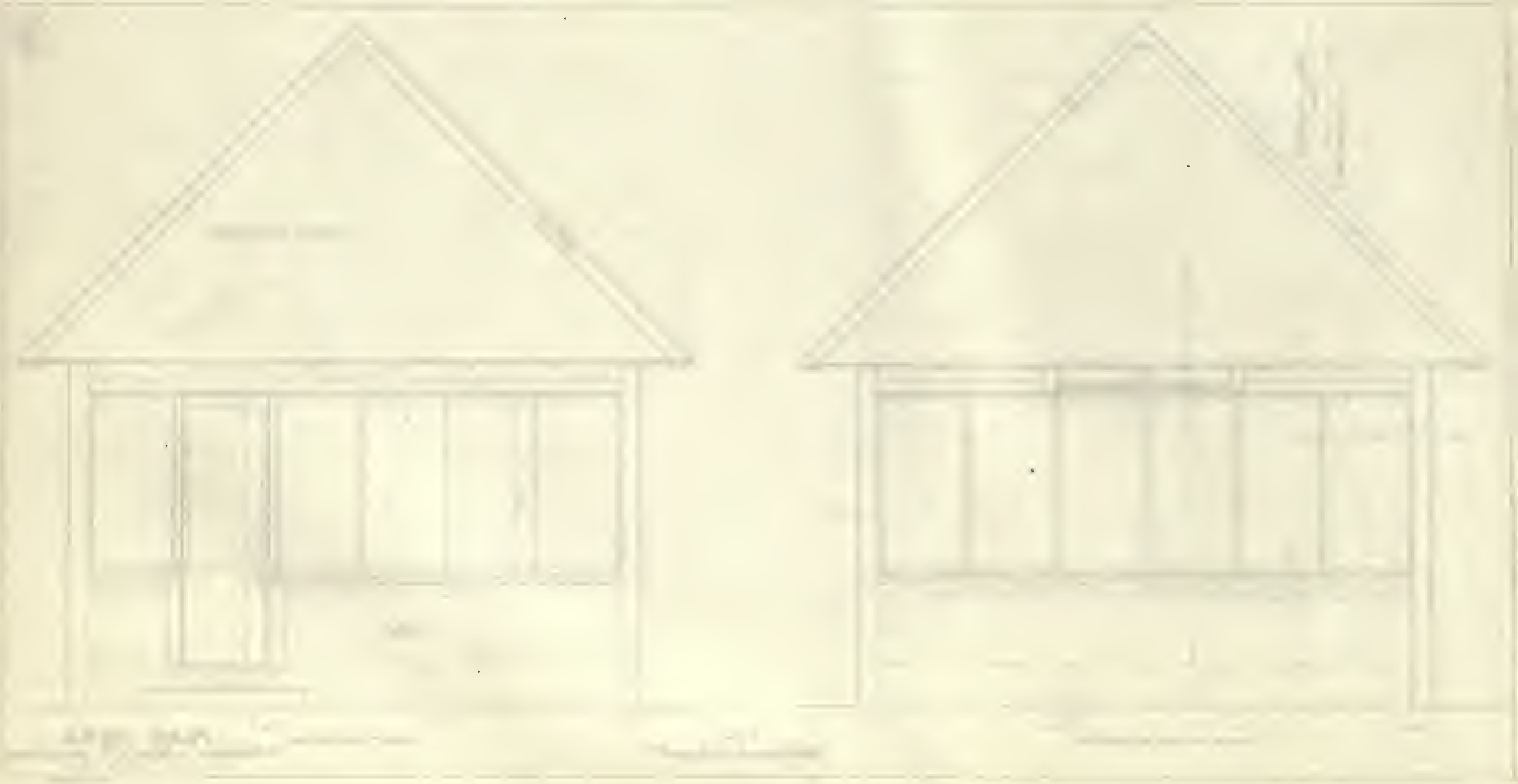


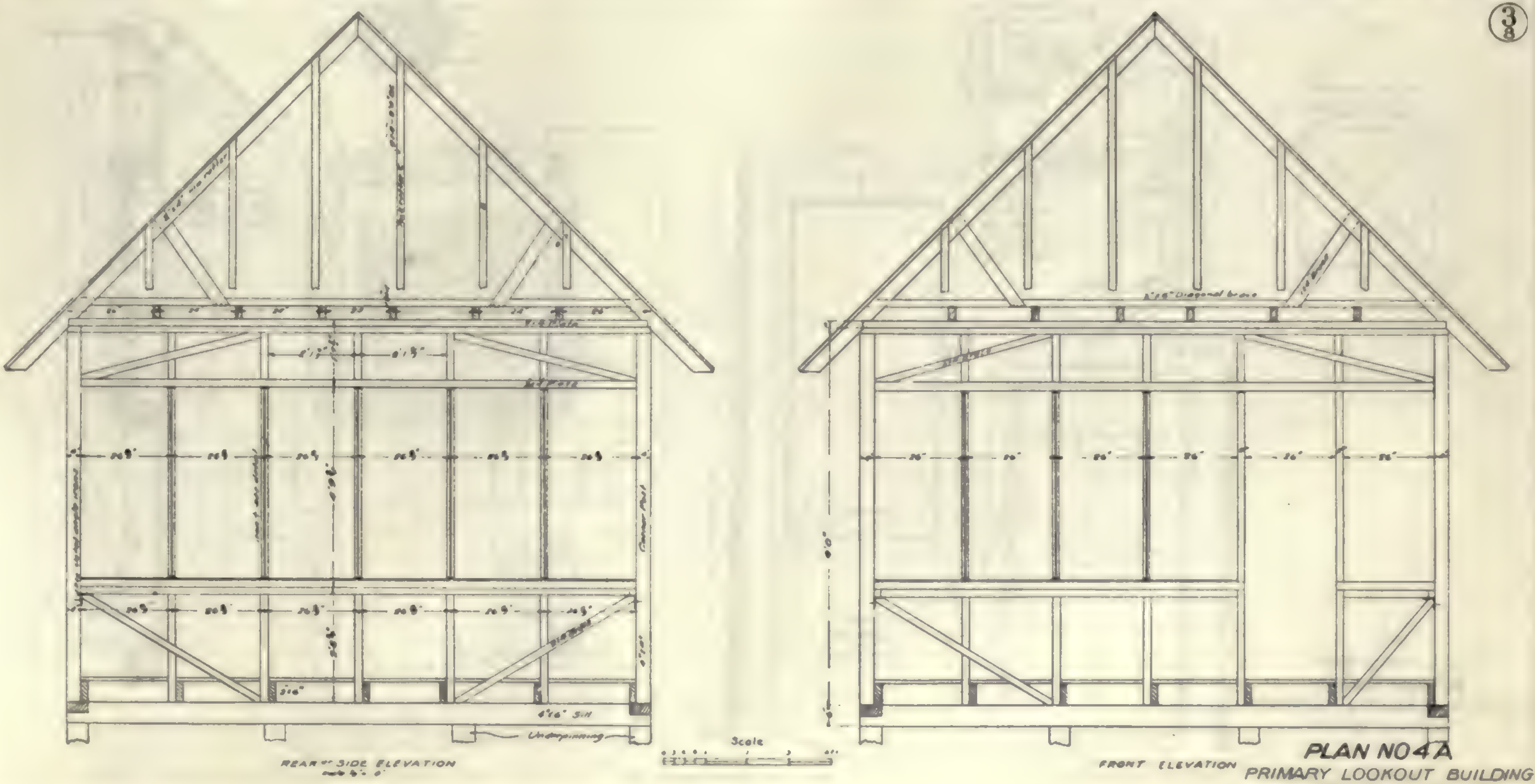
PLAN NO 4 A

PRIMARY LOOKOUT BUILDING

U S FOREST SERVICE
DISTRICT 5


PLAN NO 4A
PRIMARY LOOKOUT BUILDING
U.S. FOREST SERVICE DIST. 6

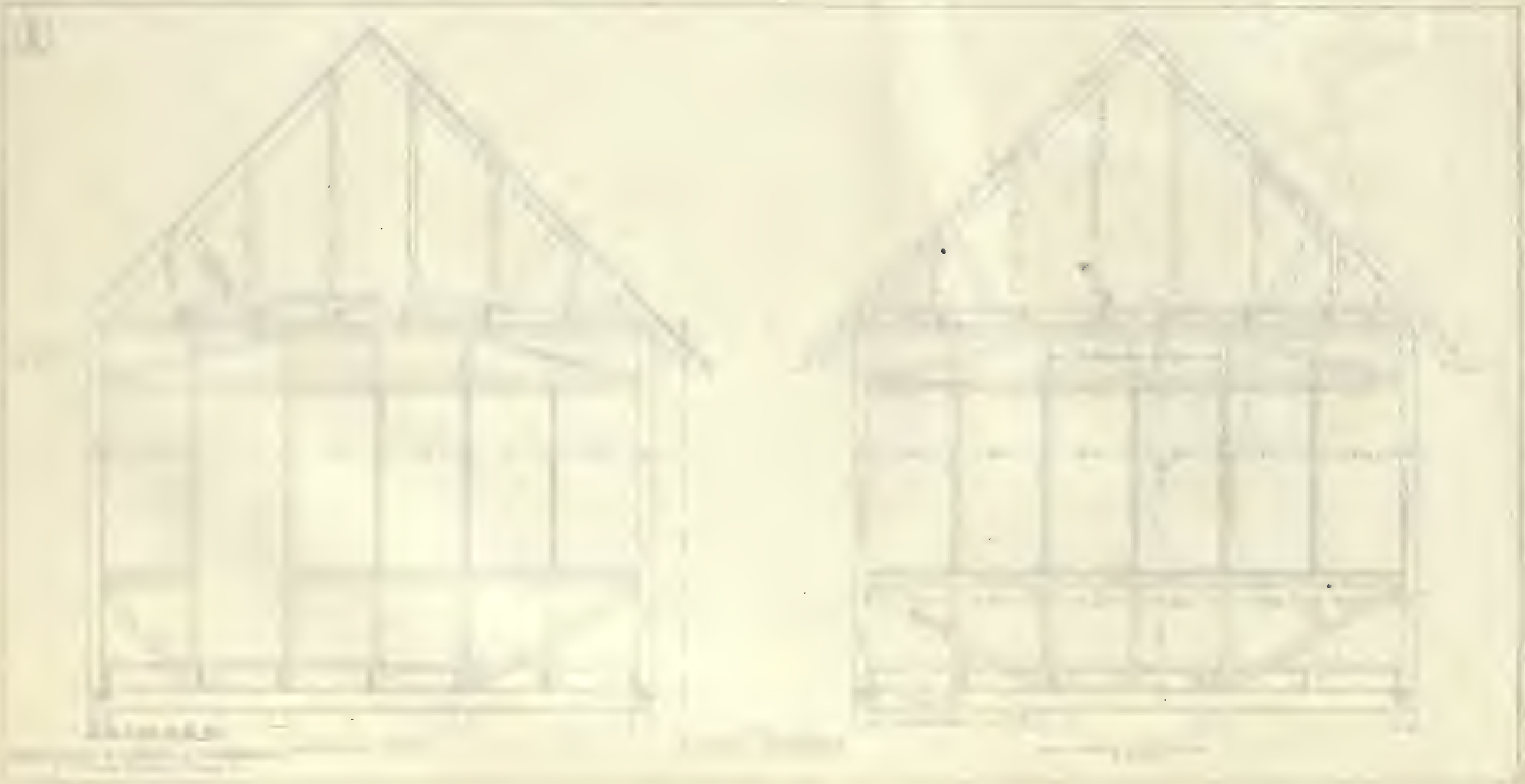


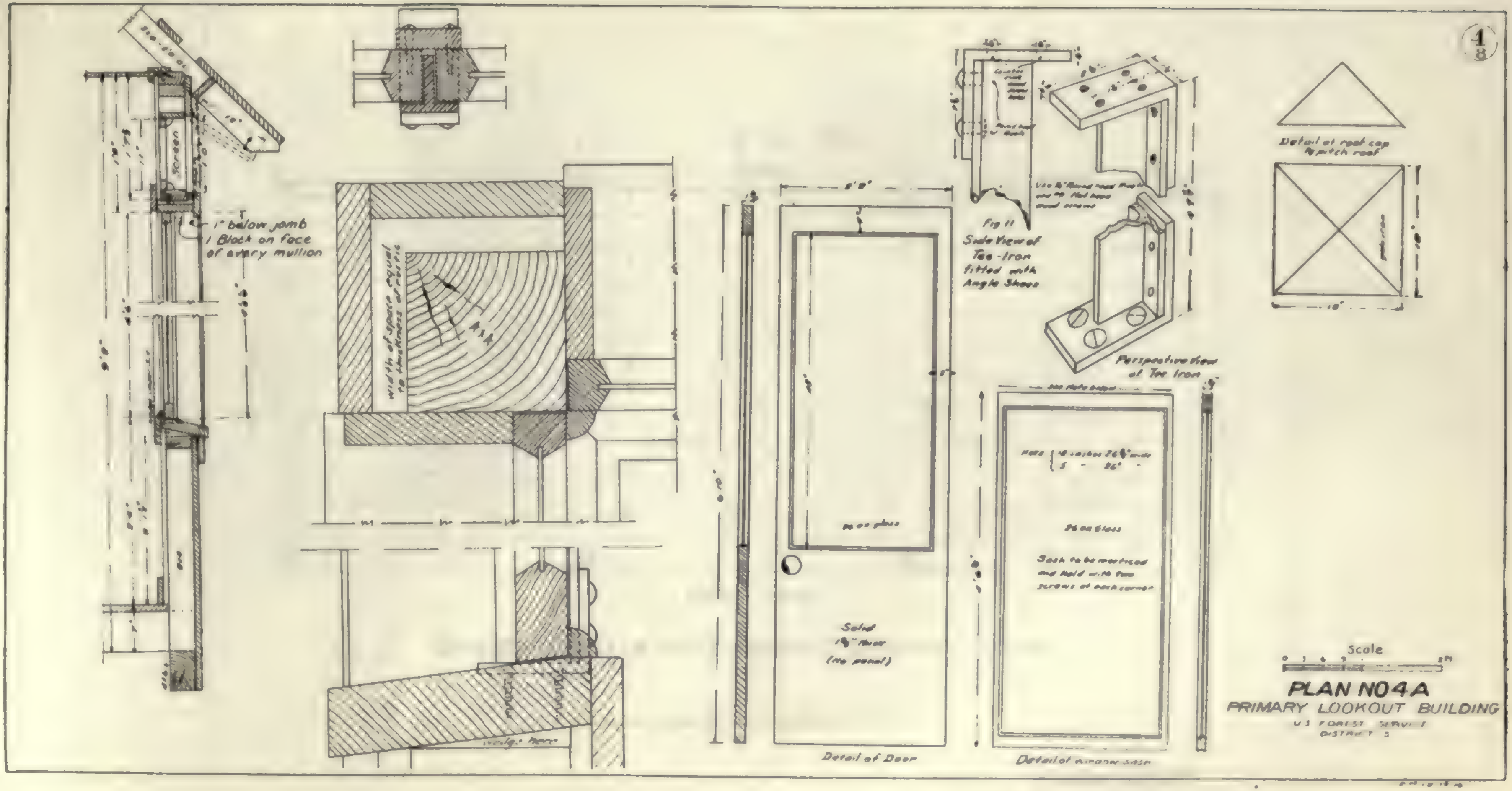


PLAN NO 4 A

PRIMARY LOOKOUT BUILDING

U S FOREST SERVICE DISTRICT 5

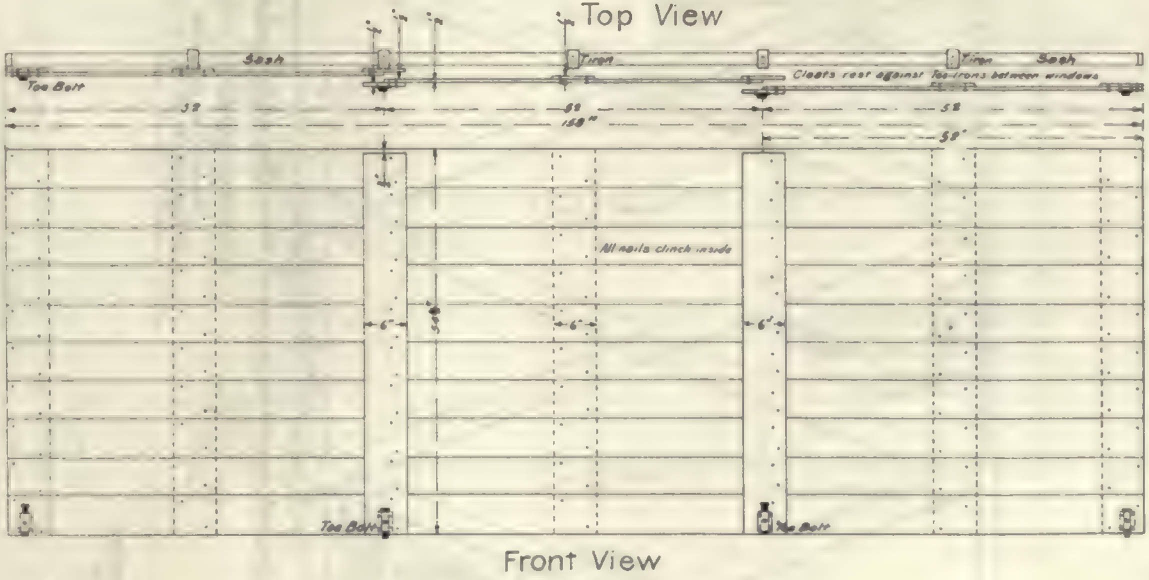




PLAN NO 4 A
PRIMARY LOOKOUT BUILDING
U S FOREST SERVICE
DISTRICT 5

4
8
Screen
1" below jamb
1 Block on face of every mullion
width of space equal to thickness of rustic
wedge here
Solid
1¾" thick
(no panel)
Detail of Door
Fig 11
Side View of Tee-Iron fitted with Angle Shoes
Use ¾" Round head Bolts and ¾" flat head wood screws
Perspective View of Tee Iron
Note { 10 sashes 26¾" wide
5 " 26" "
26 oz Glass
Sash to be mortised and held with two screws at each corner
Detail of window sash
Detail of roof cap ¼ pitch roof
10"
Scale

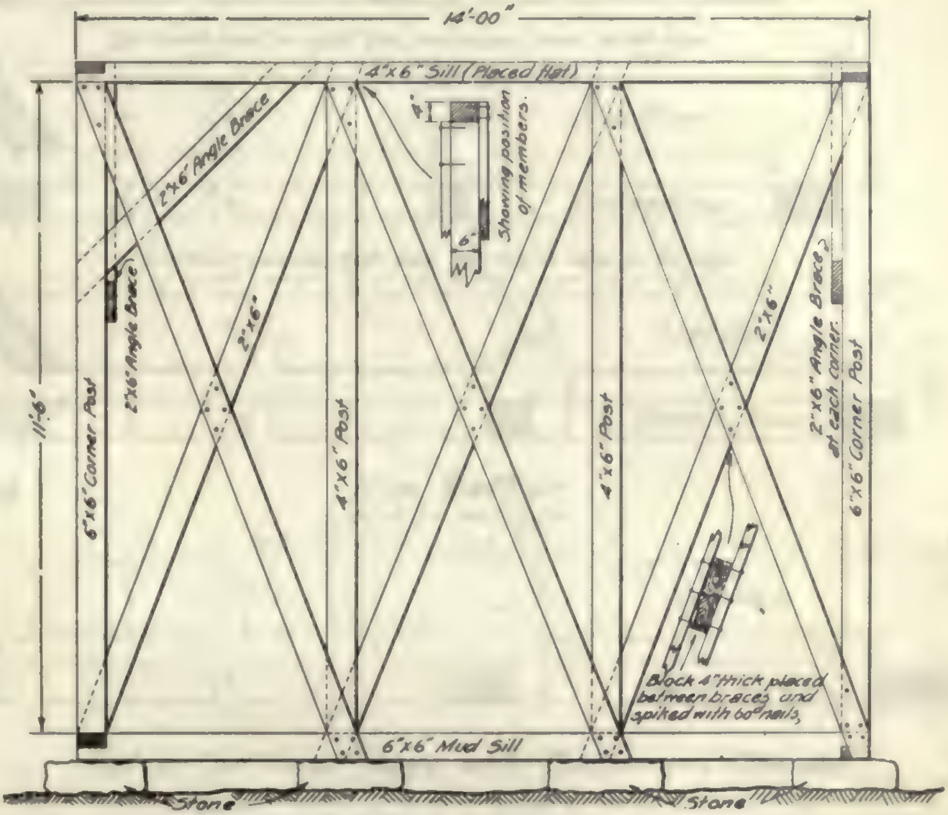
⑤/₈



SHUTTER PANELS FOR STANDARD LOOK-OUT HOUSE

Scale
0 3 6 9 12 15 18 21 24 27 30 33 36 39 42 Inches

PLAN NO 4 A
PRIMARY LOOKOUT BUILDING
U.S. FOREST SERVICE
DISTRICT 5



Design of Underpinning.

Height will vary with local needs.
This sketch is designed for a maximum elevation of 12 Ft. from ground to base of sill.

PLAN NO. 4A

PRIMARY LOOKOUT BUILDING
U.S. FOREST SERVICE
DISTRICT 5

Jack Rafters.

Cut 4 with bevel on right side, and 4 with bevel on left side.

Cut 4 with bevel on right side, and 4 with bevel on left side.

Cut 4 with bevel on right side, and 4 with bevel on left side.

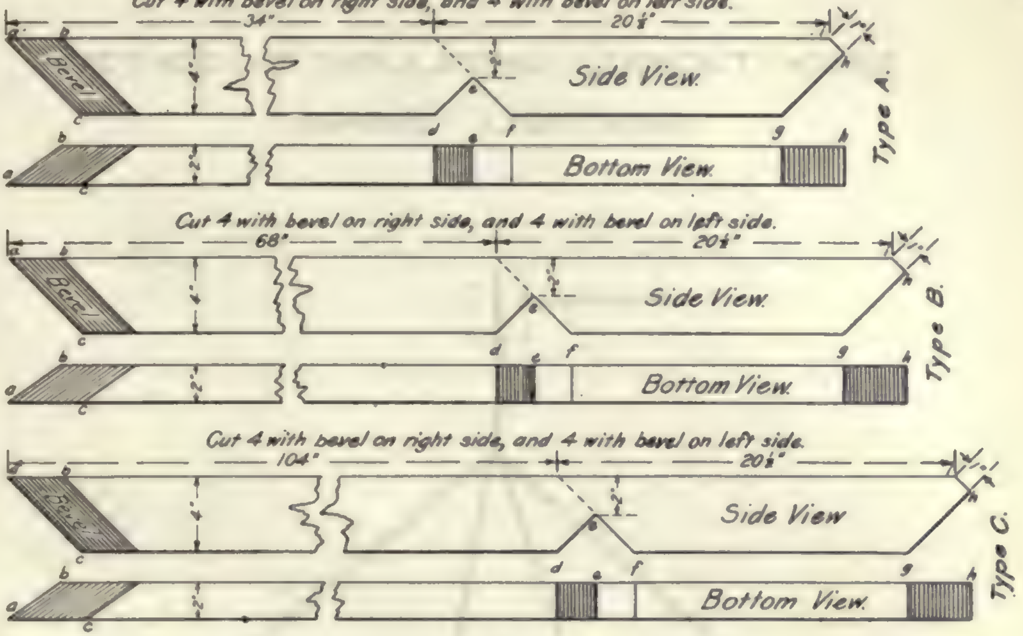
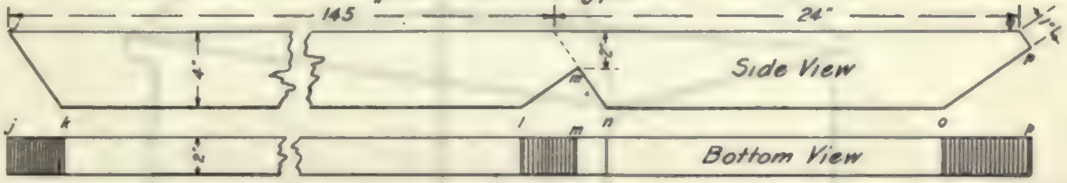


Fig. 8.

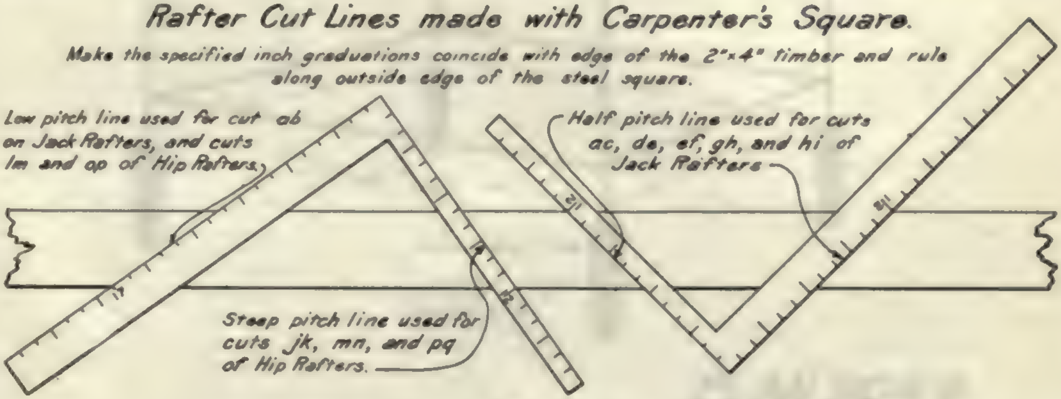
Hip Rafter.

Cut 4 of this type.



Rafter Cut Lines made with Carpenter's Square.

Make the specified inch graduations coincide with edge of the 2"×4" timber and rule along outside edge of the steel square.



Low pitch line used for cut ab on Jack Rafters, and cuts lm and op of Hip Rafters.

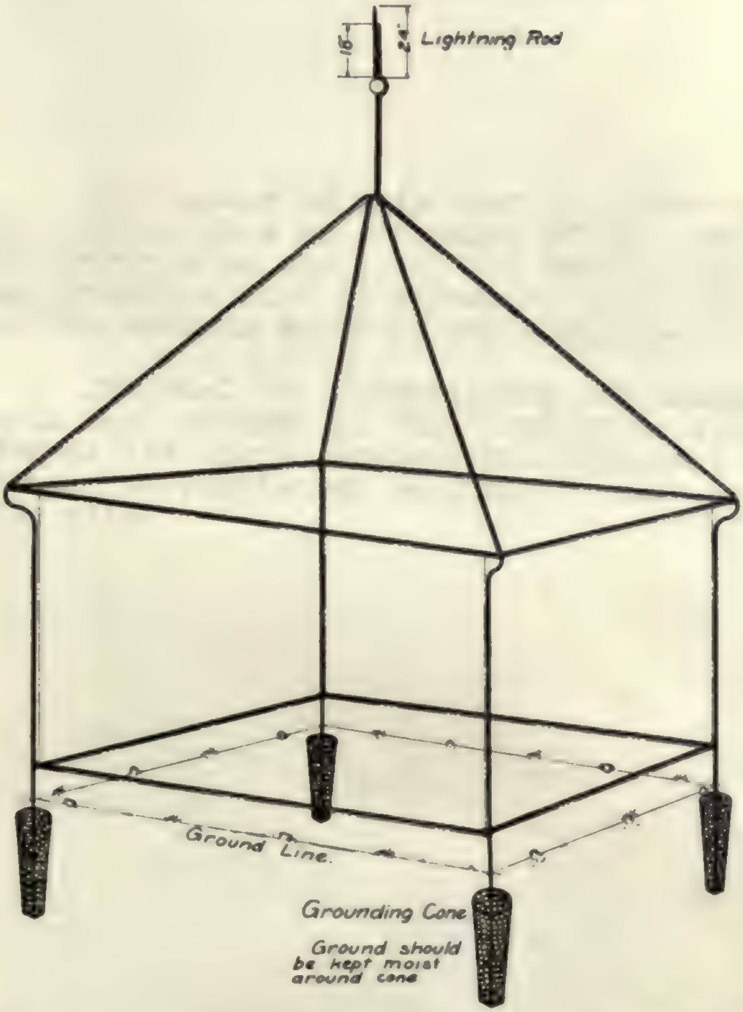
Half pitch line used for cuts ac, de, ef, gh, and hi of Jack Rafters.

Steep pitch line used for cuts jk, mn, and pq of Hip Rafters.

Fig. 9.

PLAN N04A
PRIMARY LOOKOUT BUILDING
U.S. FOREST SERVICE
DISTRICT 5

METHOD OF INSULATING LOOKOUT HOUSE AGAINST LIGHTNING



——— ——— Corner line of building.
———————— *4 Galvanized Wire.

PLAN N04 A

PRIMARY LOOKOUT BUILDING

U.S. FOREST SERVICE
DISTRICT 5

PLAN NO. 4-A

PRIMARY LOOKOUT BUILDING

Standard for District 5.

The lumber of this list is given in actual working lengths plus an allowance of 1/2 inch for trimming or over run on the job. To specify actual lengths without providing such an allowance will result in poor fits of the various parts of the completed structure.

Material for underpinning and underpinning braces is not included in this list since the amounts of material for these purposes are dependent upon conditions and circumstances peculiar to each particular building site.

Builder's List of Materials

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
		Sills and Underpinning			
5	4 x 6 - 14	Sills	Select redwood or heart cedar	Rough	140
	6 x 6	Underpinning	" " " "	"	

Note:- For item of underpinning no amount is given. The actual amount needed will depend upon the slope of the ground of each particular building site. Make due allowance for this item in the lumber order. If split or round material is used this item may be eliminated from the lumber list.

Floor Joists, Studding, Plates, Etc.

8	2 x 6 - 14	Floor joists	No. 2 Clear, Douglas fir	Rough	112
2	2 x 6 - 12	Solid bridging (To be cut to fit)	" " " "	"	24
4	4 x 4 -8'10"	Corner posts	" " " "	"	48
20	2 x 4 -1'1½"	Studding over windows	" " " "	(Sized if	16
18	2 x 4 -2'6¾"	" under "	" " " "	(possible	32
8	2 x 4 -5'2"	Braces, corners	" " " "	Rough	28
8	2 x 4 -4'8"	" "	" " " "	"	25
8	2 x 4 - 14	Plates	" " " "	"	75
8	2 x 4 -13'5"	Trimmers	" " " "	"	75
6	1 x 6 - 12	Diagonal braces under sills	No. 1 Common " "	"	36

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
		Roof Frame and Cover			
4	2 x 4 - 16	Hip rafters	No. 2 Clear, Douglas fir	Rough	43
8	2 x 4 -10'8"	Jack "	" " " "	"	57
8	2 x 4 -7'10"	" "	" " " "	"	43
8	2 x 4 x 5	" "	" " " "	"	27
8	2 x 4 - 14	Ceiling joists	No. 1 Common, " "	"	75
4	1 x 4 - 3'	Braces, hip rafters	" " " "	"	4
2	1 x 6 - 12	Diagonal braces over ceiling joists	" " " "	"	12
1	1 x 6 - 14	" " " " "	" " " "	"	7
8	1 x12 - 8	Sheeting over eaves	" " , any species	"	64
4	1 x12 - 7	" " "	" " " "	"	28
4	1 x12 - 9	" " "	" " " "	"	36
35	1 y 4 - 6	" from plates up 8"O.C.	No. 2 " " "	"	70
35	1 x 4 - 8	" " " " 8"O.C.	" " " "	"	94
1250	- -	Shingles 4½" to weather	Star A Star, red cedar		

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
	Milled Lumber				
* 3	13'6" lohg	Window sills	No. 1 Common, any species	S4S	
* 1	11'4" "	" "	" " " "	"	
* 1	3'0" "	Door sills	" " . Douglas"fir	"	
# 2	2 x 4 - 7'7"	" jambs	" " " "	"	10

*See Detail Sheet No. 4
#To dress full 2", see Detail Sheet No. 4

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
4	1x5-3/8x13'6"	Window head jambs	No. 2 Clear, Pine or select RW.	S4S	31
4	1x4-7/8x 9'8"	Corner boards	" " " " " "	"	16
4	1x5-3/4x 9'8"	" "	" " " " " "	"	20
8	1x4-1/4x 4'9"	Window casings	" " " " " "	"	22
18	½x1-5/8x 4'9"	" "	" " " " " "	"	15
6	1x 4 x 4'3"	" "	" " " " " "	"	10
5	1x 4 x13'6"	" "	" " " " " "	"	23
8	1x 4 x13'6"	" aprons	" " " " " "	"	36
28	1x 4 x 2'	Frieze between rafters	No. 1 Common, any species	S1S	19
10	1x 4 x 6'	Base boards	" " " "	S4S	20
2	5/8x 2"x36"	Strips for table board	Clear Maple	"	1
2	5/8x 2 x26"	" " " "	" "	"	1

Mouldings.

175 Lin.Ft. 1" Quarter round 6' and 8"lengths (all interior corner finish)
18 " " ½ x 1½ O.G. stop, 2 - 7' lengths, 1 - 4' length, for door

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
		Walls, Ceiling and Flooring.			
30	1 x 8 - 14	Rustic outside walls	("C" Grade California, any species		280
6	1 x 8 - 12	" " "	(obtainable in market, yellow		48
52	1 x 4 - 8	T & G Flooring, vertical grain	(pine or redwood preferred (or		139
52	1 x 4 - 6	" " " "	(No. 3 Clear, Oregon, Douglas fir		104
52	½ x 4 - 8	T & G Ceiling	Same as above		139
52	½ x 4 - 6	" "	" " "		104
195	½ x 4 -4'4"	T & G Walls below windows	" " "		282
150	½ x 4 -1'7"	" " above "	" " "		79
		Cupboards.			
8	1 x12 -2'3"	Sides	No. 2 Clear, Yellow pine	S4S	18
2	1 x12 -3'	Top	" " " "	"	6
1	1 x12 -2'6"	"	" " " "	"	5
2	1 x 6 - 3'	"	" " " "	"	3
6	1 x 3 -2'3"	"	" " " "	"	4
3	1 x 2 -2'1"	Front	" " " "	"	1
2	1 x 2 -2'8"	"	" " " "	"	1
1	1 x 2 -2'2"	"	" " " "	"	1
26	½ x 4 -1'9"	For doors T & G	("C" Grade California, any species		15
18	½ x 4 -1'3"	" " "	(No. 3 Clear, Oregon, D. F.		8
2	1 x12 -8'	Miscellaneous use	No. 2 Clear, Yellow pine		16

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
	Platform.				
4	4 x 4 - 1'11'	Frame	No. 1 Common, any species	Rough	11
4	2 x 4 - 4'3"	"	" " " "	"	12
4	2 x 4 - 3'9"	"	" " " "	"	10
8	2 x 4 - 1'11"	"	" " " "	"	11
4	2 x 4 - 2'9"	"	" " " "	"	8
4	2 x 4 - 2'5"	"	" " " "	"	5
18	1 x 4 - 4'4½"	T & G Flooring, vertical grain	("C" Grade, California, any species (No. 2 Clear, Oregon, Douglas fir		26
66	1 x 4 - 2'3"	Walls, T & G	("C" Grade California, any species (No. 3 Clear, Oregon, Douglas fir		50
2	1 x 4 - 4'9"	Base boards	No. 1 Common, any species	S4S	3
2	1 x 4 - 4'3"	" "	" " " "	"	3
2	1 x 4 - 4'9"	Cap "	" " " "	"	3
2	1 x 4 - 4'3"	" "	" " " "	"	3
	Shutters.				
120	½ x 6 - 4'4"	T & G horizontal boards	("C" Grade California, any species (No. 3 Clear, Oregon Douglas fir		320
36	½ x 6 - 4'4"	" Tie pieces	Same as above		96

Window Sash and Doors.

1 - - 2'2" x 6'10" - 1-3/8 Sash door, 26 oz. glass. See Detail Sheet No. 4
5 - - 2 6" x54¼" - 1-3/8 One light, 26 oz. glass sash. " " " " 4
18 - 26-3/8"x54¼"-1-3/8 " " 26 oz. " " " " " " 4
1 - - 2'2" x 6'10" - 1-3/8 Screen door,- screen same size as glass in door
3 - - Extra 26 oz. window lights, one to fir 26"x54¼" sash, two to fit 26-3/8"x 54¼" sash securely packed for rough transportation.

Paint

7	Gals.	(1 gal. can) Standard white paint - For roof and outside walls
3	"	(1 " ") " flat olive green " inside walls and ceiling
1	"	Floor paint - Olive green color or as near as can be purchased to correspond with wall covering
3	"	Boiled linseed oil
2	- -	4" Paint brushes
2	Lbs.	Putty
6	Pcs.	Sand paper No. 1

Hardware

18	- -	Tee irons 4'7-7/8" long with angle shoes. See Detail Sheet No. 4
8	- -	Angle tie plates " " " " 3
1	- -	Galvanized iron hood (26 gauge) " " " " 4
17	- -	Toe bolts with wood screws to fasten window shutter to walls. See Detail.
60	Lin.Ft.	8" wide galvanized iron 30 gauge ridge cap (over shingles on hip rafters
1	Gr.	Wood screws #9 - $1\frac{1}{4}$" flat head, blued
2	Doz.	Blued screws #6 - 1" flat head, attaching strips to platform table
12	Lbs.	30d. Common wire nails
15	"	20d. " " "
20	"	8d. " " "
7	"	6d. Finish " "
10	"	3d. Fine galvanized shingle nails
5	"	8d. Box nails
5	"	8d. Finish nails
2	"	Staples, galvanized fencing for fastening lightning rod
3	- -	Hinges $3\frac{1}{2}$"x$3\frac{1}{2}$" loose pin butts #160 D2, A.C.
7	Pr.	Hinges 2" loose pin butts, half surface #160 D2. A.C. Cupboard
3	"	3" strap hinges with screws for ventilators
7	- -	Cupboard turns #8830 for cupboard doors
1	- -	Rim knob latch #8052, knob #9241 for sash door
1	- -	Screen door set #1903 (Pacific Hardware & Steel Catalogue)
6	- -	" " knobs
1	Pc.	Galvanized screen wire 2' x 7', #14 mesh

Flue

If wood or coal stove is to be used instead of oil stove, order

1 - - 6" Terra cotta bottom joint
1 - - 6" " " straight joint
1 - - Galvanized iron 1/2 pitch roof plate
1 - - " " 6" drip ferrule. See Detail
1 Pc. 26 gauge galvanized iron pipe, riveted, 8" diameter, 7'6" long with storm cap riveted on top
1 Lb. Cement
1½ " Clean sharp sand

Note:- For flue material and construction see Flue Detail 6-A and 6-B. Where snow falls to exceed 30 inches, install flue protector. Add material to lumber list. See Detail 6-B.

Lightning Installation

226 Ft. No. 4 Galvanized wire
4 Lb. (260) 1¼" Galvanized steel wire staples - chisel point
1 " Solder
1 " Aluminum paint
4 - - Western Electric No. 1 Paragon Ground Cones, filled with ground charcoal

Note:- The items of wire and staples includes a sufficient amount for height of building given in plan. The actual amounts needed will depend upon the height the building is constructed above the ground. If the cones cannot be grounded at the corners of the building, add the number of feet of wire necessary to reach the nearest practicable grounding place. For details of Lightning Installation material and construction, see Page 15.

Guy Material.

5/16"	Galvanized cast steel guy rope , amount as needed
4 -	1/2" Turn buckles with eyes on each end
8 -	9/16" Galvanized oval thimbles
32-	5/16" Roebling or Crosby clips

SPECIFICATIONS

FOR

PRIMARY LOOKOUT BUILDING

Standard for District 5.

These specifications are intended to embrace all material necessary in the erection and furnishing of the building in all its parts and to furnish such instructions as appear necessary to give the builder a general idea of the plan. The plan is standardized and must be followed unless the District Forester's permission to deviate from it is secured.

LOCATION.

The house should be set square with the cardinal directions, that is, squarely north and south and east and west.

EXCAVATION.

Excavation for the foundation of the building shall be carried down to solid earth. If practicable, to make the site level it is best to do so. If impracticable, at least provide a level footing 2' x 2' for each foundation block or underpinning footing.

UNDERPINNING AND FOUNDATION BLOCKS.
(See Sheet 6)

Heights of underpinning needed will depend upon circumstances and conditions at a given building site. It is understood that in many instances to use the mud construction as shown on Sheet 6 will be impracticable. If so, set underpinning on separate supports or footings.

Underpinning or mud sills for underpinning should never be placed directly on the earth. Place them on footings of either -

(a) Substantial flat stone, maximum dimensions approximately as follows:

8" thick, 10" wide, 10" long

(b) Masonry footing

12" high, 14" square at base and 8" square at top

If high underpinning is used it should be braced as shown on Sheet 6.

MATERIALS.

All structural material should conform as closely as possible to the specifications given in the builder's list.

SILLS.

Sills should preferably be of cedar or redwood. Douglas fir may be used as a second choice. Pine should never be used unless the sill is to be 2 feet or more above the ground.

Sills at corners should be halved together. The plan calls for one sill in the center of the building. Angle braces on 45° angles should extend from each foundation post to the floor joist just above and from each corner to the sills. (See Plan of foundations).

FLOOR JOISTS, STUDDING, BRIDGING, ETC.

All joists, girts and studs should be sized, that is, dressed down so that all sticks of respective dimensions are made of uniform size.

Floor joists should be straight grain Douglas fir free from knots larger than one inch in diameter. Lay floor joists directly upon the sill. Toe nail them into place. 2" x 6" solid bridging shall be cut between sills. This item in the lumber list has been specified uncut, since the variation of thickness of floor joists and studs makes impossible the statement of the exact length of each piece of bridging. Studding, headers, trimmers, etc. may be of any reasonably straight grain material free from loose knots and knots which materially weaken the stick. Studs should be extended from sill to plate and should be firmly nailed to the floor joist and toe nailed to the sill. At the top they should be toe nailed to the plate with 2-30d. nails driven vertically through the plate into their ends. Corner studs should be of 4" x 4" sticks. Braces as shown in the drawing should be inserted. Top plate should be of 2" x 4" double with top joints over the corner studs. Plates should be fastened to each stud with two 30d. wire nails. They should be securely nailed together throughout with 20d. wire nails.

Headers over and under window openings shall be single. The lower header should be fastened to the corner stud by means of iron corner braces. (See Sheet No. 3)

Ceiling joists should be placed directly over the plates, toe nailed to the plate with 2-20d. nails and side nailed to the jack rafters with 2-20d. nails.

ROOF.

Rafters and other members of the roof frame should be of select, straight grained lumber; 1st choice Douglas fir, 2nd choice white fir, 3rd choice yellow pine, free from knots and other imperfections. Too much attention cannot be given to the selection of the best sticks for rafters. Care should be taken to cut the rafters true in order that they will have a firm bearing on the plate and with respect to jack that they rest squarely against the hips. Hips should meet without opening at the top. The hip rafters should be braced with 1" x 4" pieces to 2" x 6" diagonal braces shown on Sheet 3. These diagonal braces should be laid diagonally over the ceiling joists from corner to corner. They should be nailed at each ceiling joist with 2 - 2od. nails. Roof projections should be sheeted solid with 1" x 12" rough lumber. Rafter ends are to have no trim. Shingles should be laid 4½" to weather on 1" x 4-7/8", placed 8" on center for roof covering. Lay the bottom courses of shingles double and project them 1½" to lower edge of the sheeting.

SIDING.

Siding should be nailed at each stud with 2 - 8d. nails. Care should be exercised to fit siding closely under window sills and at eaves. Cant board should be inserted between rafters over the plate. Bore a 3/4" hole in each cant board to provide ventilation in the attic. Corners should be finished with 1" x 4" boards.

INSIDE FINISH.

Ceiling and walls shall be of ½" x 4", T & G milled ceiling. Floor shall be of 1" x 4" vertical grain T & G No. 2 Douglas fir. All corners should be finished with 1" quarter round moulding. Provide a trap door 2' x 2' for entrance through the ceiling to the attic.

FLUES.

Either oil stoves or common wood stoves may be used depending upon accessibility of fuel. If wood stoves are used the flue construction should conform to the standard illustrated in Details No. 6-A and 6-B. In regions where snow falls to the depth of 30 inches or more, Plan No. 6-B should be followed. In spacing the joints of pipe below the roof line see to it that the joint passing through the roof will set as shown in the drawing. Guy the top of the flur securely with three strands of #9 or #12 telephone wire.

DOORS, WINDOWS AND FRAMES.

Order the door and windows and hardware for them as listed. Install three sets of ventilators over the windows as shown on Sheets No. 2, 3 and 4. These should be at the rear and on both sides. Provide hinged shutters for them as shown on Sheet 4. Sheet 4 shows detail of window frame construction. Note that the angle of the angle iron is with its back to the inside of the building. On the outside at the angle iron and over the openings where two windows abut against the angle iron, a strip of wood is to be fastened with screws. (See small section at left hand side of Sheet 4). Be sure to chisel out seat in sill for the angle iron shoe. Shutters, the details of which are shown on Sheet 5, should be provided for each set of windows. They should be placed in position at the close of each season.

CLOSETS, PLATFORM AND CUPBOARDS, ETC.

Sheet No. 1 shows the furnishing of the house, the details of construction and floor plan arrangement of them. Cupboards should extend in height to level of window sill. The builder's list indicates the material to use. The sanitary couch with pad and cover for it and revolving chair are available upon requisition to the District Forester and Ogden Supply Depot respectively. Stoves of either kind may be requisitioned from the San Francisco Equipment Depot.

The dimensions of the platform are shown on Sheet No. 1. The finish around the top of the platform should be made of 1" x 4" laid flat against the sides of the platform and extending 3/4" above the floor of the platform. This will give a finish and at the same time act as a block to keep the chair from slipping off. The table used on the platform, after being oriented, should be nailed or screwed firmly on to the platform floor. Since the house is always to be set square with the cardinal directions, the oriented table will be square with the walls. After this is done the hardwood strips should be very carefully set on the surface of the table in orientation and screwed down. It will be noted that the locator board will then hava a play of 6 inches in any direction, which will facilitate getting around obstructions to view.

TELEPHONE WIRING.

Telephone wire should not be anchored to the sides of the building. Establish a pole for anchoring or anchor to a nearby tree if one is available. Bring the wire to the building as shown in Cut No. 18 of the Telephone Circular. During the period of the year that the Lookout is unoccupied the leading in wire should be disconnected at the Fahnestock clip and at the fuse and then taken into the building. Its replacement at the beginning of the fire season is a simple task. From the fuse, the wire should be brought down the side of the building on knobs, taken under the building on knobs along the floor joists to a point under the platform. There it should be brought through the floor near one inside edge of the platform and up through the platform along one of the table legs to the ringer set which ordinarily should be fastened to a leg of the table. The protector should be placed on the inside wall of the platform at the point where the wire comes through the floor.

INSULATION.

See Sheet No. 8. Insulation should be considered as a part of construction. Material for it should be ordered with the hardware.

No. 4 galvanized wire should be used for all conductor material. The conductors should be run down all hips from the main wire or terminal which should be extended from the peak up about 20 inches and filed to a sharp point. The hip conductors first mentioned should be continued over the points of the eaves and directly to the ground at the four corners of the house, care being taken to make no sharp turns in the wire. As an integral part of the system there should be connected to the vertical conductors two horizontal conductors, one running clear around the house on the eaves, the other running clear around the house at the ground line. This arrangement with connections is shown by the attached sketch. All connections between conductors should be mechanically and electrically perfect. At the meeting or crossing points the wires should be soldered together carefully. All wires should be securely stapled directly to the building every 12 inches, and in addition the staples should be placed on each side of each soldered connection, so as to eliminate any strain on the joint. When the wiring is complete it should be given two coats of aluminum paint.

If there is a stove pipe or other metal projection it should be connected to the main system by a direct wire.

Probably the most important part of the system is the GROUND. While conditions on lookout points differ to such an extent that it will be necessary to use different types of ground, the standard ground rod or connection will be a perforated copper cone filled with ground charcoal, manufactured by the Western Electric Company and known as the "Paragon Ground Cone No. 1", price $1.65 each. These cones are 1 foot long and vary in diameter from 1½ inches at the bottom to 4½ inches at the top, and are provided with a wire cable connection so that the lightning rods can be attached and soldered without difficulty. One of these cones should be sunk in the ground at each corner of the building, standing out about 8 inches from the structure and to such a depth that the copper cable protrudes above the surface. This will admit of a convenient connection and inspection. The vertical rods on the four corners of the building should be given direct connection with these ground cones.

PAINTING.

Color - Outside, white 2 coats
- Roof white 2 "
- Inside, olive drab, 2 coats

If the lumber is dry, give the outside and roof a priming coat as soon as they are placed. Add the second coat as soon as the first is dry. Do not apply paint if the lumber or shingles are not seasoned or if their surfaces are damp from rains, fogs, dews, frosts, etc. Do not paint during damp weather. Before applying paint to knots, cover them with a light coat of shellac. Before applying paint to the interior, the surface should be carefully cleaned. To secure a real fine finish sand paper the surface. Nail holes should be filled with putty after the first coat of paint is applied.

The floor should receive three coats of floor paint to match the wall paint.

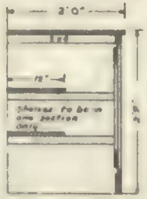
GUYING.

If the house is to be exposed to severe winds it should be guyed at each corner with 5/16" galvanized, cast steel guy ropes. 1/2" turn buckles with 2 eyes should be inserted in each guy for the purpose of adjusting the tension of the guys. Anchors for guys may be either 3/4" eye bolts set in hard rock, guy wire wrapped around large rocks, 1/2" telephone guy rods sunk in ground or any other substantial form of anchor.

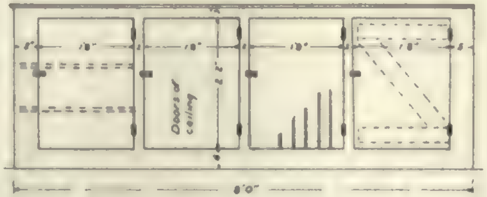
The guy at the upper end should be fastened to the hip rafters and to corner studs. This attachment should be made before the roof and siding is put on. The guys can best be fastened to the building as follows:

Bore 1/2" holes through the hip rafters 1 inch from the top edge and in line with the inside corner of the corner studs; bore a hole on about 45° angles from outside corner to inside corner through the stud. The inside outlet of the holes should be about 5 inches below the top of the stud. Pass one end of the guy rope through the hole in the stud and on through the hole in the rafter and bring the wire back through the hole in the stud leaving a projecting end long enough to fasten with 2 wire rope clamps at a point just outside the building. The guy wires on the inside of the building should be recessed into the stud so as to make possible the nailing of the ceiling and wall covering over them.

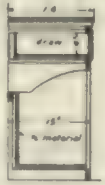
①



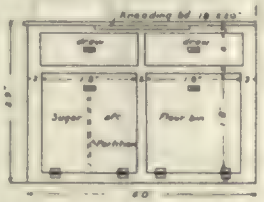
CROSS SECTION



DETAIL OF CABINET -A

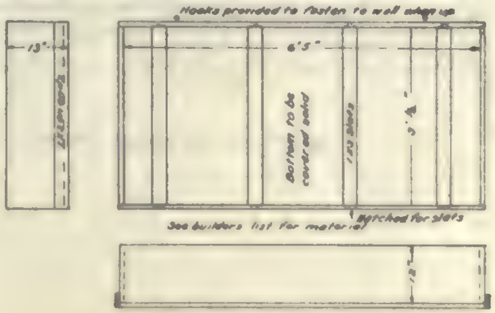


CROSS SECTION

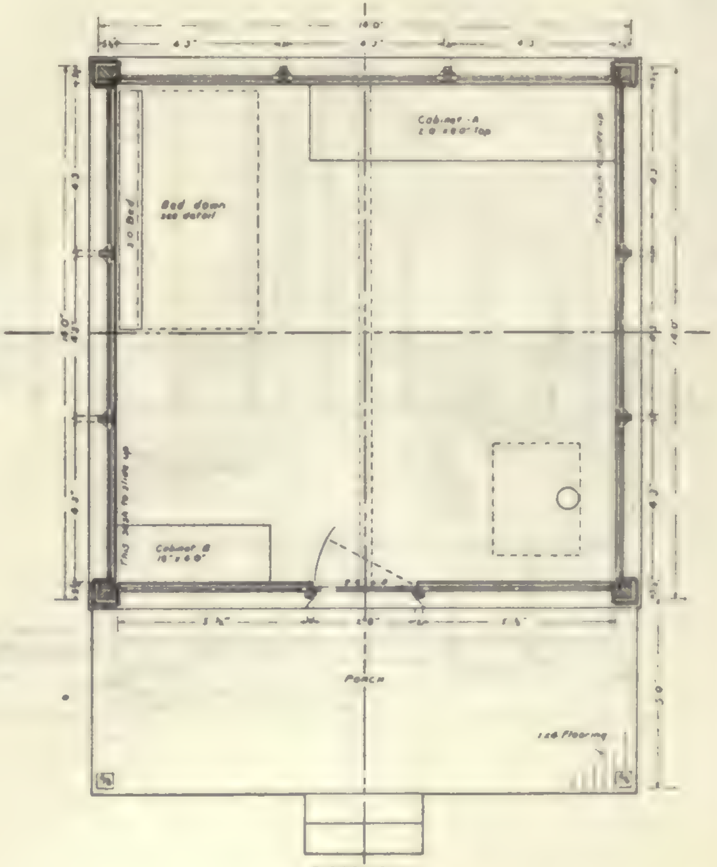


DETAIL OF CABINET -B

Scale


Hooks provided to fasten to wall when up
13"
6'5"
Bottom to be covered solid
1x3 slots
3'4"
12"
See builders list for material
Notched for slots

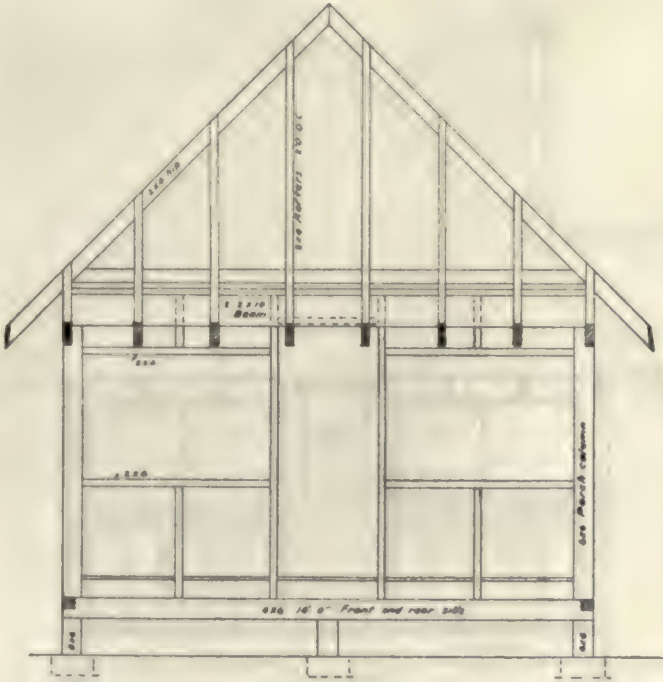
DETAIL OF BED RACK
Spa No. 3000-S w&s sloane (recessed)
mattress 4" thick



FLOOR PLAN
Scale

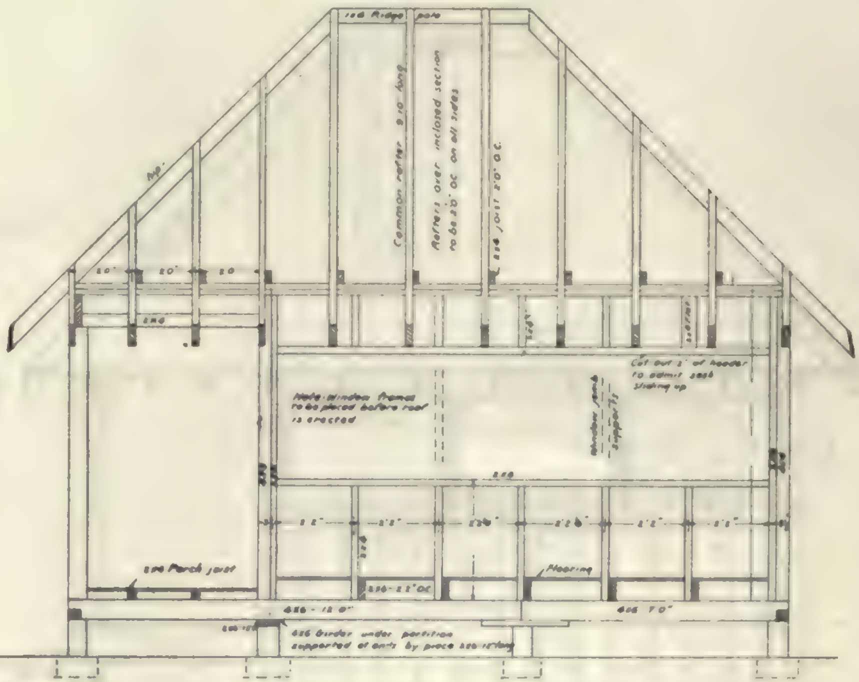
PLAN No. 4 B
SECONDARY LOOKOUT HOUSE
14'0" x 14'0"
U. S. FOREST SERVICE
DISTRICT No. 6

②



FRONT ELEVATION OF FRAME

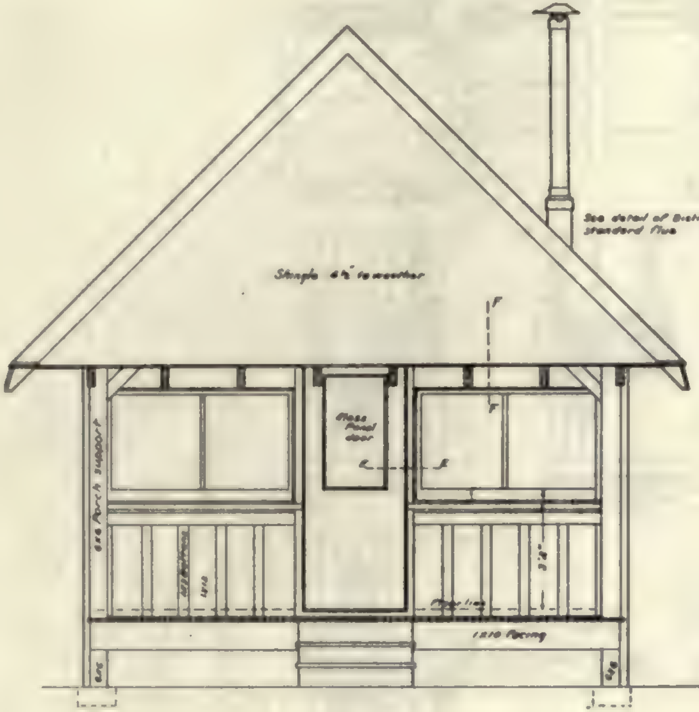
Scale


1x6 Ridge pole
Common rafter 2x10 long
Rafters over inclosed section to be 2'0" OC on all sides
2x6 joist 2'0" O.C.
2'0"
2'0"
2'0"
2x6
Cut out 2" of header to admit sash sliding up
Note: window frames to be placed before roof is erected
Window jamb supports
2x6
2'2"
2'2"
2'2"
2'2"
2'2"
2'2"
2x6 Porch joist
2x6 - 2'2" OC
Flooring
4x6 - 12' 0"
4x6 7'0"
4x6 Girder under partition supported at ends by piece 6x6 12" long

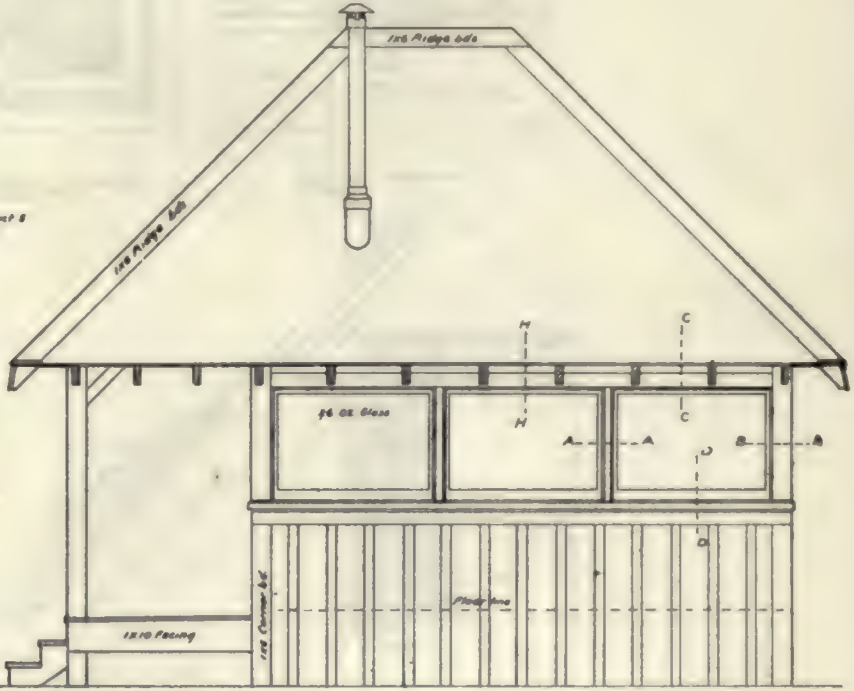
SIDE ELEVATION OF FRAME

PLAN No. 4B
SECONDARY LOOKOUT HOUSE
14'0"X16'6"
U. S. FOREST SERVICE
DISTRICT No. 6

③



FRONT ELEVATION



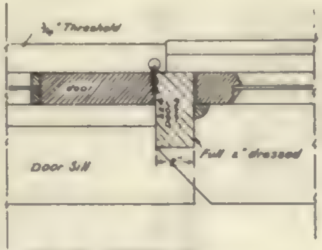
SIDE ELEVATION

Scale

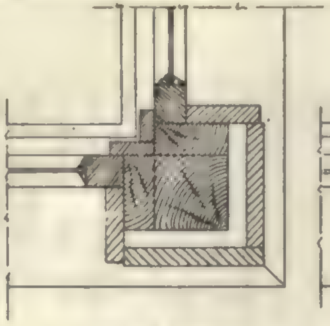
PLAN No. 4 B
SECONDARY LOOKOUT HOUSE

14'0" X 16'0"
U. S. FOREST SERVICE
DISTRICT No. 6

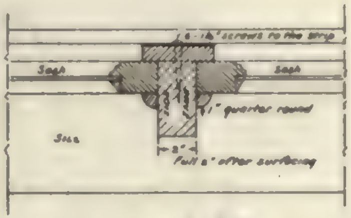
④



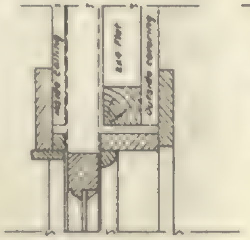
SECTION THROUGH E-E
DOOR AND WINDOW



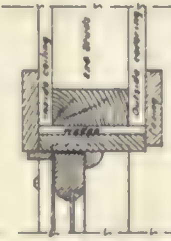
SECTION THROUGH B-B
CORNER POST



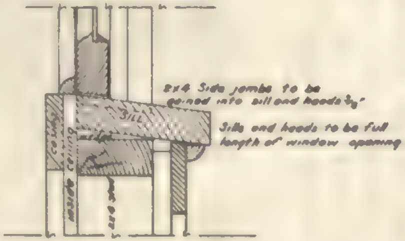
SECTION THROUGH A-A
WINDOW



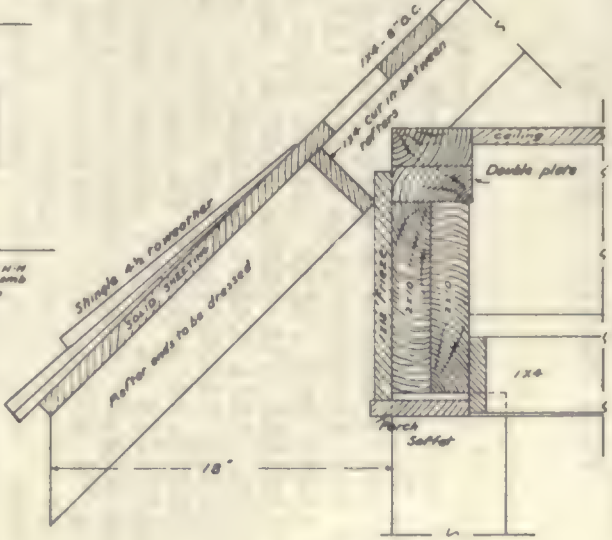
SECTION THROUGH C-C
showing pocket for raising sash



SECTION THROUGH H-H
showing solid head jamb for immovable sash


2x4 Side jambs to be gained into sill and heads ¾"
Sill
Sills and heads to be full length of window opening
Casing
Inside ceiling

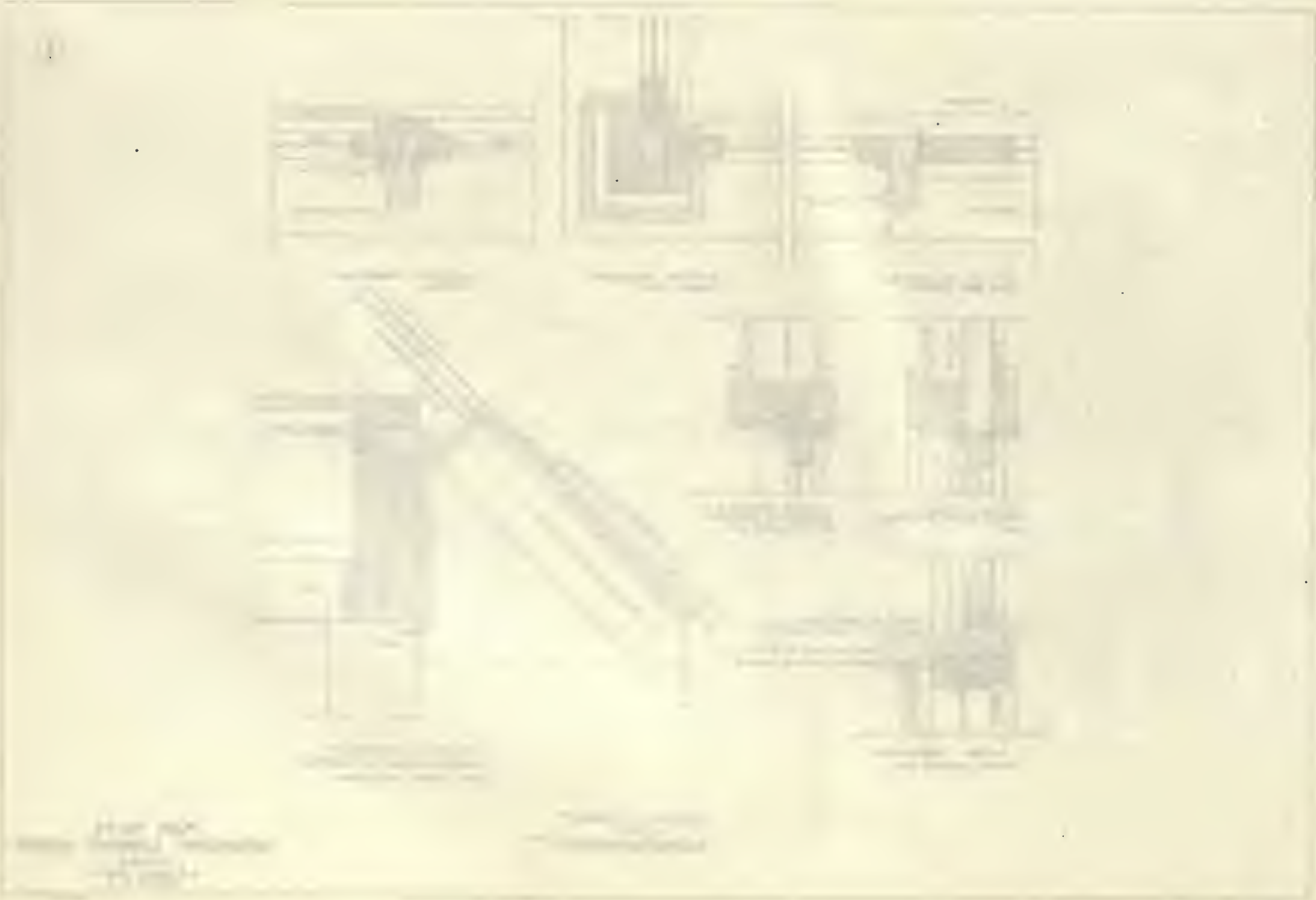
SECTION THROUGH D-D
TYPICAL WINDOW SILL



SECTION THROUGH F-F
SHOWING METHOD OF CARRYING
LOAD OVER 14'0" SPAN

DETAIL SHEET
Scale

PLAN No. 4B
SECONDARY LOOKOUT HOUSE
14' 0" X 18' 0"
U. S. FOREST SERVICE
DISTRICT No. 6



PLAN NO. 4-B

SECONDARY LOOKOUT

14'0" x 19'0"   Porch Included
1/2 Pitch - Hipped Roof

Items preceded by the mark (*) are standard and are not subject to change or choice. Conditions of the local lumber markets and the isolation of certain building sites from markets carrying a varied stock of lumber are factors which will govern selection of the type of outside and inside wall cover, trim, and sizes and kinds of nails. All items in this class are indicated by the mark (#). To prepare a complete order list, select the items marked (#) which under the particular circumstances, will be best adapted for use at a given building site. Add such items to those marked (*). To all items of lumber add the specifications shown under "Grade and Species", and "Finish". For example: two pieces 4" x 6" x 16' No. 1 common redwood, cedar, Douglas fir or pine, rough. To all items of hardware, add only such descriptive matter as is necessary to adequately describe each item. For example: [illegible] pounds 50d. common wire nails - 3 pounds 3d. fine galvanized wire nails. Do not show on the order list the purpose for which the hardware items are to be used.

Estimated cost of construction - labor at $4.00 per day - $90.00.

BUILDER'S LIST OF MATERIAL

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
		Sills, Joists and Floor Supports.			
* 5	4 x 6 - 14	Sills	Redwood, Cedar or D. F.	Rough	140
* 2	4 x 6 - 12	"	" " " " "	"	48
* 7	2 x 6 - 14	Floor joists	(1st choice, No.2 clear D.F.	(Sized	98
* 3	2 x 4 - 14	" " porch	(2nd " , " 1 " W.F.or R.F	(if	28
* 9	2 x 4 - 14	Ceiling joists	(3rd " " 2 " Y.P.	(practic-	84
* 2	2 x10 - 14	Porch supports	(	(able	47
* 1	6 x 6 - 12	Underpinning	Heart cedar or Redwood	Rough	36

Note:- The item of "Underpinning" includes material for height shown in plan. The actual amount needed will depend upon slope of the building site. This should be taken into consideration when making lumber order. If split or round material is used, this item may be eliminated from lumber order.

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
		Studding, Plates, Corner posts, Rafters, Girts, etc.			
* 1	6 x 6 - 16	Porch corner posts	No.2 clear D.F. or Y.P.	S4S	48
* 8	2 x 4 - 16	Rafters	Same as joists	Rough	85
* 4	2 x 4 - 14	"	" " "	"	37
*14	2 x 4 - 12	"	" " "	"	112
* 2	4 x 4 - 16	Corner posts	" " "	"-sized	43
*16	2 x 4 - 16	Studding and braces	No. 1 Common, any species	" "	171
* 4	2 x 4 - 12	Plates	" " " " "	" "	37
* 8	2 x 4 - 14	"	" " " " "	" "	85
* 6	2 x 4 - 16	Furring, extras, etc.	" " " " "	" "	64
* 8	2 x 4 - 14	Window trimmer or headers.	" " " " "	" "	75

No. Pcs.	& Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
		Wall Covering (Outside)-Choice of-			
#25	1 x12 - 16	Wall cover, siding	No. 1 Common, any species	Rough or S1S	400
#23	5/8x 3 - 16	" " " ,battens	" " " " "	" " S4S	92
	or				
#450	Bd.Ft.	6"or 8"Rustic wall cover	"C"Grade California,any species, or No.3 Oregon D.F.		450
		Note:- The above item of wall cover provides for height given in plan; if building is higher, the correct amount of additional lumber must be added to lumber order.			
* 4	1 x 6 - 16	Corner board	No.2 Clear,any species	Rough or S4S	32
		Roof Covering -- Eaves project 18"			
*240	Bd.Ft.	Sheeting, 1 x 4,for shingles	No. 2 Common, any species	"	240
*160	"	" " 1 x12,rafter projection.	" 1 " " "	" " S1S	160
*5500		Shingles,4½"to weather	Star A Star, Red Cedar		
# 9	1 x 6 - 16	Cone or saddle boards	No.2 Clear, yellow pine	" "	72
#62	Lin.Ft.	26 gauge Galv.iron hip and cone capping.			
* 4	1 x 6 - 12	Diagonal braces over plates	No. 1 Common, any species	"	24
* 6	1 x 4 - 12	Frieze (between rafters)	" " " " "	" " S1S	24
		Porch.			
* 2	1 x12 - 14	Porch frieze board	" " " " "	" " S4S	28
* 2	1 x 6 - 14	" " "	" " " " "	" " "	14
* 2	1 x 4 - 12	" " "	" " " " "	" " "	8
* 2	1 x10 - 14	" skirt boards	" " " " "	" " "	24

No. Pcs.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
	Flooring.				
*320	Bd.Ft. 1 x 4	T.& G.Flooring, Vertical Grain	"C"Grade California, any species, or No.3 Oregon D.F.		320
	Inside Wall and Ceiling Cover (Choice of).				
#464	Bd.Ft.1 x12	Ceiling, (including porch) and wall cover	No.1 Common, any species	Rough or S1S	464
#116	" "5/8x 3	Ceiling (including porch) battens	" " " " "but W.F. "	" S4S	116
#110	Lin. Ft. 1" x 1"	strips corner fillers	" 2 Clear, any species	" " "	
Or					
#580	Bd.Ft. 1 x [illegible]	T. & G. Ceiling(including porch) and wall cover	"C"Grade California, or No.3 Oregon D.F.		580
#110	Lin. Ft. 1"	Quarter Round Corner fillers	No. 2 Clear, any species		
Or					
#550	Bd.Ft. 1 x 8	Ship lap ceiling(including porch & wall cover	"C"Grade California, or No. 3 Clear Oregon D.F.		550
#110	Lin. ft. 1"	Quarter round corner fillers	No. 2 Clear, any species	"	
* 4	1 x 6 - 14	Base boards	No. 1 Common, any species	S4S	28

Note:-

Add to the lumber order your choice of the above material, and specify rough or surfaced as indicated.

No. Pcs.	Size	Location and Purpose	Grade and Species	Finish	Bd.Ft.
		Window and Door Frames.			
* 4	2 x 8 - 14	Sills	No. 2 Clear, D.F.,R.W. or Y.P.	S4S	75
* 4	1 x 6 - 14	Head jambs	" " " " " " " " " "	"	28
* 1	2 x 4 - 16	Door and window jambs	" " " " " " " " " "	"	11
* 1	2 x 4 - 18	" " " "	" " " " " " " " " "	"	12
* 8	1 x 4 - 14	Head casing & aprons	" " " " " " " " " "	"	38
* 8	1 x 4 - 14	Inside casings, etc.	" " " " " " "	"	38
* 3	1 x 4 - 12	" " "	" " " " " " "	"	12
* 2	$\frac{1}{2}$ x1$\frac{1}{2}$ - 18	Door and window stops			7
*200	1" Quarter	round window stops and under sills. (200 lin. ft.)			
* 1	1 x12 - 16	Miscellaneous use.	No. 2 Clear, D.F.,R.W. or Y.P.	"	16
		Windows and Doors.			
* 1	2'8" x 6'8" - 1$\frac{3}{4}$"	Panel door, 26-oz. glass,	see detail sheet #60.		
* 9	2'11"x 4'3" - 1$\frac{3}{4}$"	One light sash, 26-oz.glass,	see " " "		
* 2	2'11"x 5'$\frac{1}{2}$" - 1$\frac{3}{4}$"	Two-lights sash, 26-oz. glass,	" " "		
		Cabinets and Bed Box.			
* 5	1 x12 - 16	Cupboard or Cabinet	No.2 Clear, R.W.,Cedar or Y.P.	"	80
* 1	$\frac{1}{2}$ x12 - 16	" " "	" " " " " " " " "	"	80
* 4	1 x 4 - 14 (Bed Box)	T.&G. Doors	"C"Grade California, any species, or No. 3 Clear Oregon D.F.		22
#3	1 x12 - 16	Bed Box	No.2 Clear,R.W.,Cedar or Pine	"	48
# 1	1 x12 - 14	For sides Bed Box	" " " " " " " "	"	14
# 8	1 x 4 - 12	T.&G.for bottoms and end bed box	"C"Grade California, any species, or No.3 Clear Oregon D.F.	"	32

Note:- See sheet No. 1 for detail of cabinet and bed box.

Hardware List.

* 5	Lbs.	30d.	Nails,	common wire, frame
*15	"	20d.	"	" " "
*25	"	10d.	"	" " "
*10	"	10d.	"	" " , roof sheeting
*16	"	3d.	"	, fine galvanized for shingles
* 4	"	2d.	"	, " " " " over eaves and flashing, etc.
* 1	"	4d.	"	, finish, window stops, finish, etc.
* 9	"	8d.	"	, casing, flooring, finish and frames.
* 8	"	8d.	"	, windows, door frames, finish, etc.
* 4	"	6d.	"	, finish, miscellaneous
#12	"	10d.	"	, common, if outside walls 1 x 12.
# 5	"	6d.	"	, " " " " " 5/8 battens or 8d. nails for 1" battens.
# 8	"	10d.	"	, common, if outside walls, rustic.
#10	"	6d.	"	, casing, if interior wall finish is 1 x 4 T. & G.
#12	"	8d.	"	, casing, if interior wall finish is 1 x12 material.
# 6	"	6d.	"	, casing, if interior wall finish is 5/8 x 3 battens; 8d. if 1" battens.

* 1 pr. 3½ x 3½	Loose pin Butts A.C. for door.
* 1	Rim latch #8052, knob #9241
* 1	Forest Service rim lock
* 2 pr.	Window spring bolts
* 4 " 2"	Full surface cupboard hinges.
* 4	Cupboard catches #4800 A.C.
* 3 doz.	Round head blued screws, 1½", No.8.
* 2 pr. 3"	Full surface loose pin butt hinges for bins.

*50 lin. ft. 3" wide 30 gauge galvanized iron for flashing.
* 4 Drawer pulls #672 A.C.

Note:- Numbers above items of hardware are Pacific Hardware & Steel Company's Catalogue numbers. See hardware list in Building Material Section.

Flue.

* 1 6" Terra Cotta Bottom Joint or Pipe.
* 1 " " " straight joint
* 1 Galvanized Iron (26 gauge) drip ferrule for 6" T.C.
* 1 " " " " roof plate for 6" " " (one-half pitch roof)
* 1 Pc. Galvanized iron, 26 gauge, riveted pipe, 6" dia. 8' long with storm cap riveted on top. The builder should solder the drip ferrule to this pipe for support and to prevent leakage.
* 1 lb. Cement and
*1.3 " Clean sand for each joint of terra cotta
*24 ft. No.12 telephone wire for guy wires.

Note:- See standard chimney detail for material and flue construction. The 6" galvanized pipe should be made to slide easily inside of 6" T.C. and lower end made to fit common black iron stove pipe. Also see detail page 12 . For flue protector, add material to lumber list and install the protector.

Paint.

*10 Gals. Regulation White Paint, walls and roof, 3 coats for Lookout houses.
* 3 " " Olive Green " , interior walls " .
* 1 " " " " " , floor.
* 1 lb. Putty.
* 6 pcs. Sand paper No. 1.
# 1 Gal. Boiled Linseed Oil.
#1/2 " Turpentine.

If Laird and Sinclair paints are used, omit linseed oil and turpentine, and add:

1 Gal. Arcturps. for each 5 gallons of outside paint on order list. See Painting Section in this Manual, for mixing and applying paint.

Cement.

See specifications for all cement work in concrete foundation - if practical for this building.

SPECIFICATIONS

FOR

SECONDARY LOOKOUT

14'0" x 19'0"

These specifications are intended to embrace all material necessary in the erection and completion of a building in all its parts, and to furnish such instructions as appear necessary to give the builder a general idea of the plan. Variations due to different locations and accessibility of lumber markets have been considered and estimates prepared accordingly.

The general plan as regards construction of frame and other vital parts of the structure is to be followed unless permission to deviate from the plans and specifications has first been secured from the District Forester. Deviations of minor consequence, however, to take care of unforeseen local conditions and circumstances may be made by the builder.

EXCAVATION.

Excavation for the foundation of the building shall be carried down to solid earth. The bottom of the excavation shall be level and smooth. When necessary to grade into un-level ground for the purpose of providing a level building site, the slopes of the excavations resulting must clear the sides of the building by at least three feet. If necessary, provision should be made to prevent earth caving from the embankment from contacting with the sills. If foundation posts are of wood, they too should be protected.

FOUNDATION.

Foundations should be either of -

(a). 6" x 6" heart cedar, redwood or Douglas fir underpinning, set upon substantial flat stones of sufficient thickness to project at least 4 inches above the ground. Wood blocks should never be used for footings under foundation posts.

(b). If substantial stones are not available, a masonry footing should be provided. For masonry use only hard stones, preferably flat ones. All should be carefully imbedded on their broadest faces in mortar of 1 part cement and 2 parts coarse, clean, sharp sand. Each layer should be well filled and flushed up on both sides and firmly bonded together. The tops should be made level to receive the underpinning. See Table No. C-4.

(c).- Large stones of sufficient thickness to raise the sill to a height of at least 12 inches above the ground.

(d). Blocks of masonry or concrete at least 12" high, 10 inches wide on top and 16" square at the bottom. The top of concrete and masonry blocks should be made level to receive the sills. See concrete section Table C-4.

MATERIALS.

All structural materials should conform as closely as possible to the specifications given in the builder's list and lumber order list. That minor deviations must sometimes be made is recognized as unavoidable.

SILLS.

Should preferably be of cedar or redwood. Douglas fir may be used as a second choice.

Sills at corner should be halved together. When two or more pieces are necessary to form the total length of sill, a splice should be made on the foundation supports, as indicated on the plan.

Two or more joints should not occur on the same line of foundation posts. Arrange to have the splices made over foundation posts of different sets.

FLOOR JOISTS, STUDDING, BRIDGING ETC.

Floor joists should be of selected sticks, straight grain and free from all knots larger than 1 inch in diameter; 1st choice being Douglas fir, 2nd choice, White fir, 3rd choice Yellow pine. Studding, headers, trimmers, plates, etc., may be of any straight grain material free from loose knots and knots which materially weaken the stick. Lay floor joists directly upon the sills. Where two joists form the span, use the lap joint. In all cases, place one bow of the joist up. Place solid 2" x 6" bridging at the ends of each joist, and if span exceeds 12', place 1" x 4" cross bridging in the center.

Corner studs should be 4" x 4". The plan indicates methods of placing studs.

Headers over window openings and door openings should be double.

Girts of 2" x 4" scantling should be placed horizontally in all outside walls midway between the top and bottom plates.

Place ceiling joists directly over the plate and nail securely to the rafters and toe nail into plate.

Where two sticks form the span of a ceiling joist, lap them over the center partition or over a studding.

ROOF.

Rafters and other members of the roof frame should be of selected straight grain lumber; 1st choice Douglas fir, 2nd choice Yellow pine, 3rd choice White fir, free from knots and other imperfections.

Care should be taken to cut the rafters true in order that they will rest firmly on the plate, meet squarely at the apex of the roof, and that the jacks have a good bearing on the hips.

Roof projections should be sheeted solid with 1" x 12" rough or dressed lumber, depending upon circumstances.

Rafter ends should be finished in the manner illustrated by the diagram "Section"

Either Star A Star Red cedar or redwood shingles, or Sugar pine or White fir shakes may be used. Shingles should be laid 4½" to weather on sheeting 8" on center; 24 inch shakes 6 inches to weather; 30 inch shakes 9 inches ; and 36 inch shakes 15 inch to weather. See Table No. B.M.-2.

The ridge of the roof should be finished with 1" x 6". Nail this ridge securely with 10d nails.

SIDING.

As available and as circumstances might dictate, the builder may choose any style of siding included in the following list:

(a) Rough lumber siding free from loose knots of a diameter greater than 1½", and boards free from weather check and large rot disfigurements and large pitch pockets.

(b) Shiplap, drop siding, bevel siding or rustic, free from loose knots.

(c) Star A Star shingles or of other species.

The material lists include sufficient siding of the respective kinds to cover a building of the wall height on the diagram. The amount of material needed will vary, however, with the height of the foundation posts. The builder should keep this in mind when ordering siding.

Except on porch side, 3 inch galvanized iron flashing should be properly placed over each window frame.

PORCH

The porch roof is to be supported by two 2" x 10" girders free from knots over 1 inch in diameter, and other imperfections. See Detail Sheet 5.

INSIDE FINISH.

Any accessible kind of inside finish may be used, preferably shiplap or pine beaded or plain ceiling. When ordering from California mills, specify "C" grade; when ordering from Oregon mills or yard, specify "No.3" clear. When milled lumber is not available, dressed or rough lumber with 3/8" x 2" or 1/2" x 2" strips may be used over cracks. A 1" x6" base should be extended around each wall.

CUPBOARDS AND BED.

Build cupboards according to the detail on Sheet 5 and place them as shown on the floor plan. The bedstead is a box hinged to the floor. When not in use it swings up and fastens to the wall. When in use, it swings down to the floor.

Use the same kind of material in making the box as is used for the inside walls. The slats shown in the diagram are supplied to hold the bedding in place when the box is not on the floor. Bed springs will be furnished upon requisition from the District Equipment Depot. Requisitions should show size of springs and the purpose for which they will be used.

FLUES.

See details No. 6-A and 6-B. Use plan 6-A in regions of light or no snowfall. Use plan 6-B where snowfall exceeds 30 inches. See to it that the joints are spaced and placed so that the joint passing through the roof will be in the position shown by the drawings. Guy the top of the floors to the buildings with three guys of No. 9 wire.

MOULDING.

Place moulding in all corners.

1st choice - 7/8" x 7/8" quarter round
2nd " - 3-quarter moulding
3rd " - dressed or rough strips 1" x 1".

DOORS.

Order doors of the dimensions given in the plan, and fit them with locks and hinges as given in the estimate.

WINDOW AND DOOR FRAMES.

Make the door and window frames as shown on the Detail Sheet No. 4. Two windows on opposite sides of building are to slide up in pocket (see detail). To support the upper plate, frame and case the openings in rear and on both sides before placing the roof frame.

PAINTING.

Color - Outside, white (2 coats)
Roof, white (" ")
Inside, flat olive drab (2 coats)

If the lumber is dry, give the outside and roof a priming coat as soon as it is placed; put on the second coat as soon as the first is dry. Do not apply paint if lumber is not thoroughly seasoned or if the surface is damp. Before applying the paint to interior, woodwork should be carefully cleaned. Before applying paint to knots, cover them with a coat of shellac.

The floor should receive three coats of floor paint.

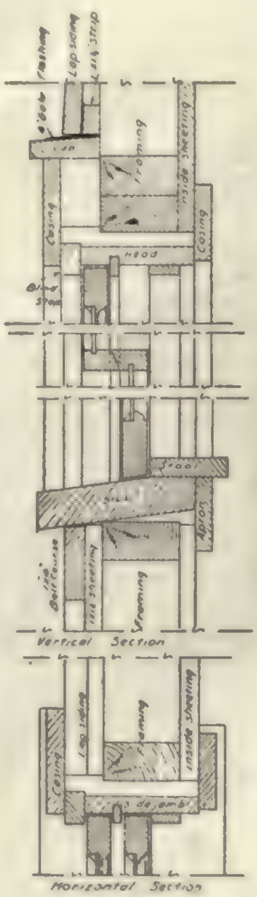
INSULATION.

If this building is erected on high situations exposed to lightning, it should be insulated the same as Standard Lookout House, to-wit:

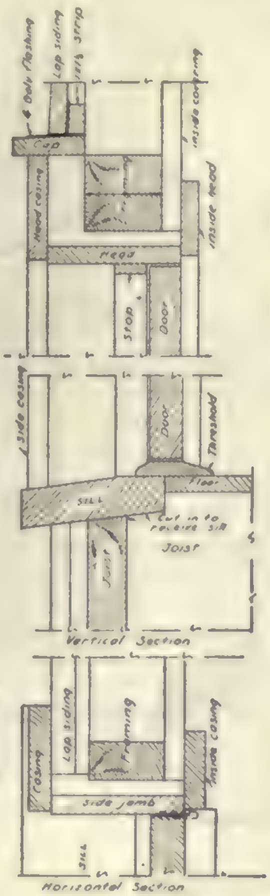
No. 4 galvanized wire should be used for all conductor material. The conductors should be run down all hips from the main wire or terminal, which should be extended from the peak up about twenty inches and filed to a sharp point. The hip conductors first mentioned should be continued over the points of the eaves and directly to the ground at the four corners of the house, care being taken to make no sharp turns in the wire. As an integral part of the system, there should be connected to the vertical conductors two horizontal conductors, one running clear around the house on the eaves, the other running clear around the house at the ground line. This arrangement with connections is shown by the sketch attached to Standard Lookout House specifications. All connections between conductors should be mechanically and electrically perfect. At the meeting or crossing points the wires should be soldered together carefully. All wires should be securely stapled directly to the building every twelve inches, and in addition, the staples should be placed on each side of each soldered connection, so as to eliminate any strain on the joint. When the wiring is complete it should be given two coats of aluminum paint.

If there is a stovepipe or other metal projection, it should be connected to the main system by a direct wire.

Probably the most important part of the system is the GROUND. While conditions on lookout points differ to such an extent that it will be necessary to use different types of ground, the standard ground rod or connection will be perforated copper cone filled with ground charcoal, manufactured by the Western Electric Company and known as the "Paragon Ground Cone No.1";price $1.65 each. These cones are 1 foot long and vary in diameter from 1½ inches at the bottom to 4½ inches at the top, and are provided with a wire cable connection so that the lightning rods can be attached and soldered without difficulty. One of these cones should be sunk in the ground at each corner of the building, standing out about eight inches from the structure and to such a depth that the copper cable protrudes above the surface. This will admit of a convenient connection and inspection. The vertical rods on the four corners of the building should be given direct connection with these ground cones.

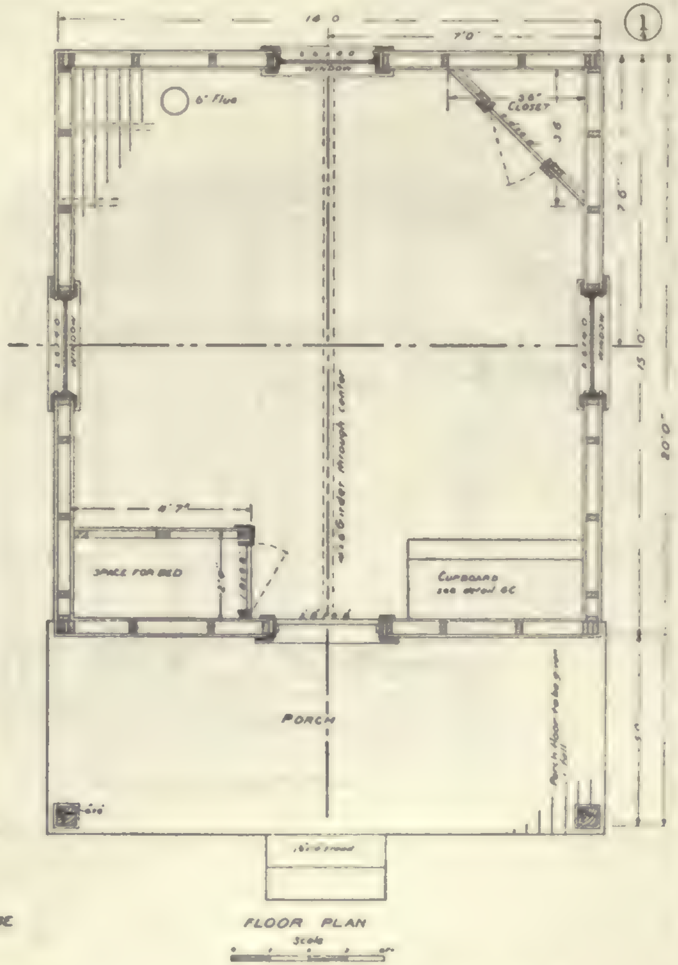


DETAIL OF WINDOW FRAME



DETAIL OF OUTSIDE DOOR FRAME

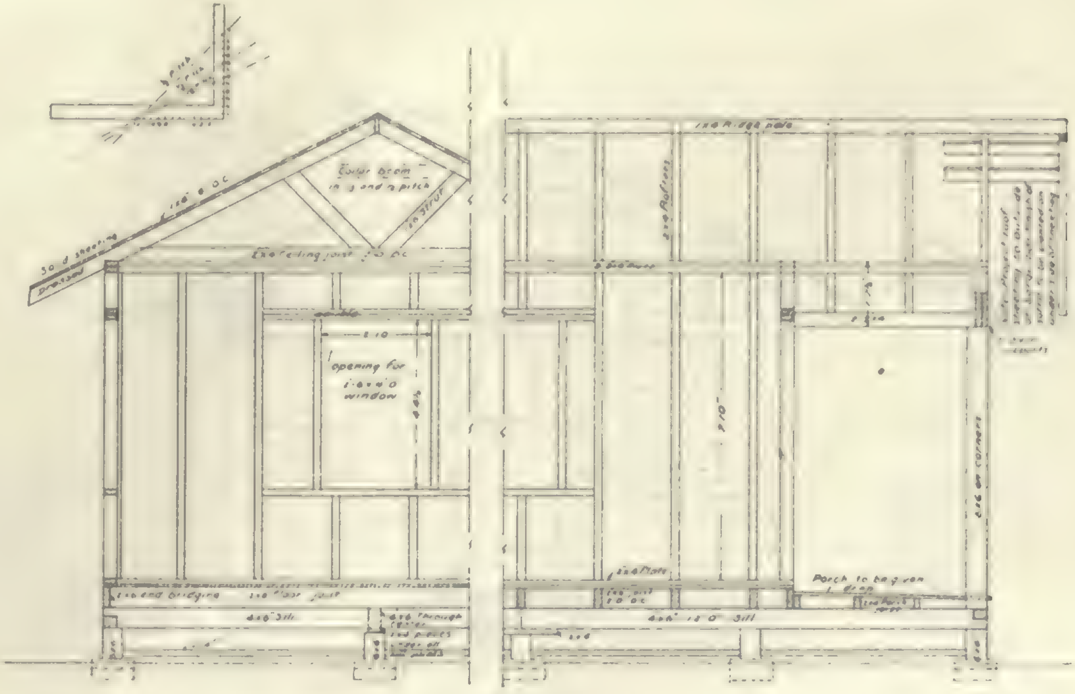
Note Sill and jambs of both door and windows to be made narrower if rustic or boards and battens are used for outside cover



FLOOR PLAN

PLAN No. 4C
1 ROOM FIREMANS DWELLING
14'0" X 20'0"
U S FOREST SERVICE
DISTRICT No. 5

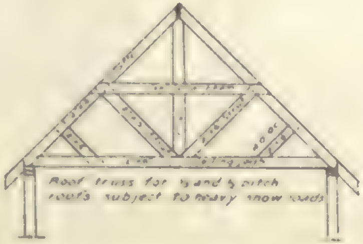
②



END ELEVATION OF FRAME

SIDE ELEVATION OF FRAME

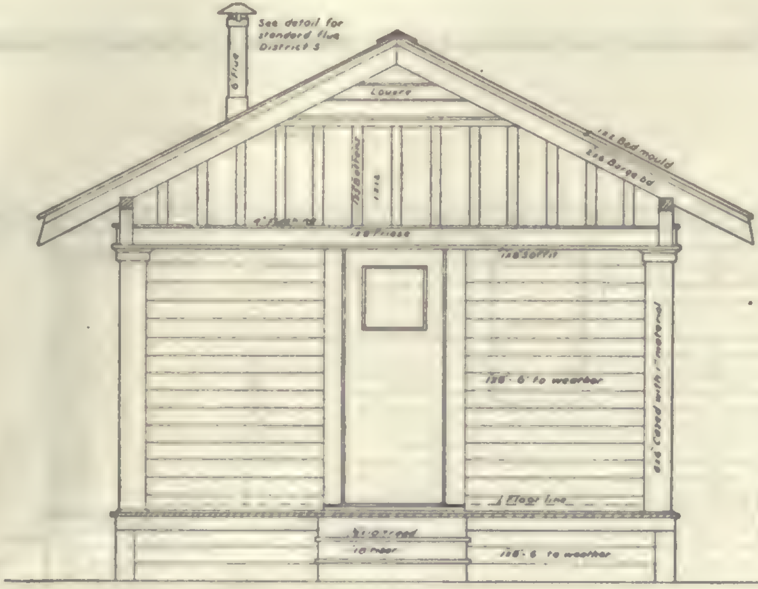
Scale



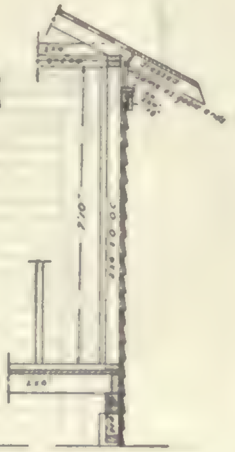
Roof truss for 1/3 and 1/2 pitch roofs subject to heavy snow loads

PLAN No. 4C
I ROOM FIREMANS DWELLING
14' 0" X 20' 0"
U. S. FOREST SERVICE
DISTRICT No. 6

③



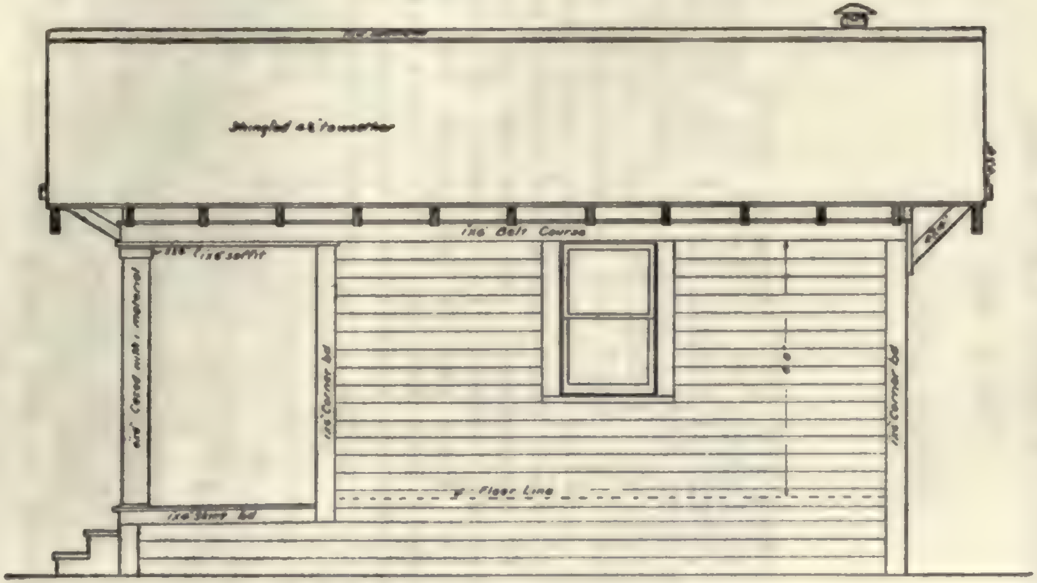
FRONT ELEVATION
Scale



CROSS SECTION
Showing 1x8 wall covering

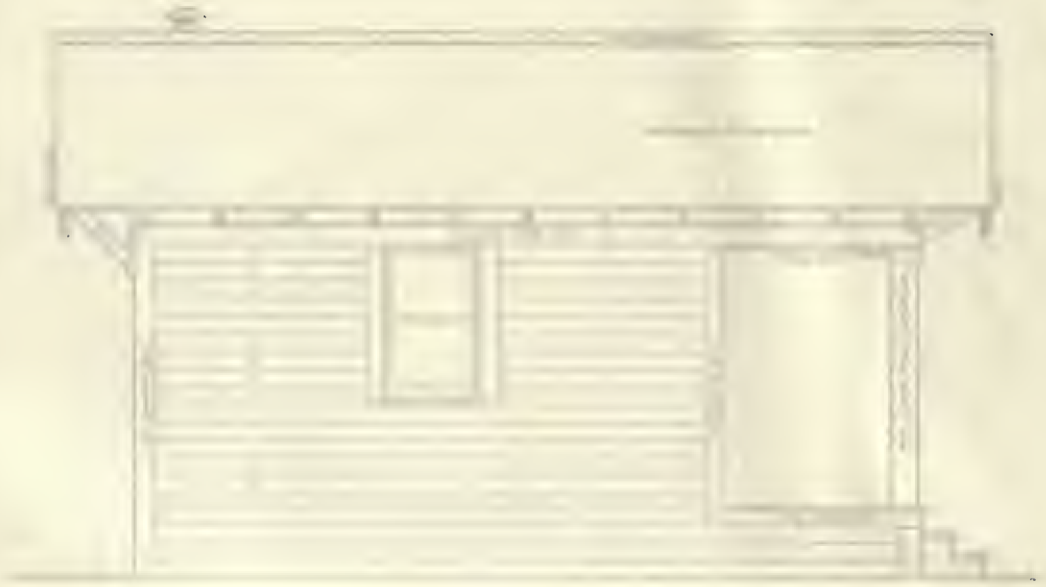
PLAN No. 40
I ROOM FIREMANS DWELLING
14'0" X 20'0"
U. S. FOREST SERVICE
DISTRICT No. 5

④



SIDE ELEVATION
Scale

PLAN No. 40
I ROOM FIREMANS DWELLING
14'0" X 20'0"
U. S. FOREST SERVICE
DISTRICT No. 5



PLAN NO. 4-C

ONE ROOM FIREMAN'S DWELLING

14' x 20'

(Including Porch)

Items preceded by the mark (*) are standard and are not subject to change of choice. Conditions of the local lumber markets, and the isolation of certain building sites from markets carrying a varied stock of lumber are factors which will govern selection of the type of inside wall cover, trim and sizes and kinds of nails. Elevation of the particular building site will determine the slope of roof to use and the dimensions of the roof frame material to order. All items subject to change or choice are indicated by the mark (#). To prepare a complete order list, select the items marked (#) which, under the particular circumstances, will be best adapted for use at a given building site. Add such items to those marked (*). To all items of lumber add the specifications shown under "Grade and Species", and "Finish": For example, two pieces 4"x6"-16' No. 1 Common, redwood, cedar, Douglas fir or pine, rough. To all items of hardware add only such descriptive matter as is necessary to adequately describe each item. For example, 2 pounds 30d. common wire nails - 3 pounds 30d. fine galvanized wire nails. Do not show on the order list the purpose for which the hardware items are to be used.

Estimated cost of construction - labor at $4.00 per day - $ 120.00.

	No. Pos.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.

Sills and Floor Joists.

	No. Pos.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
*	2	4 x 6 - 16	Sills-side and center	Redwood,Cedar or Douglas fir	Rough	64
*	2	4 x 6 - 12	" "	" " " " "	"	48
*	3	4 x 6 - 14	" end " "	" " " " "	"	84
*	9	2 x 6 - 14	Floor joists	)No.2Clear, D.F. 1st. Choice	(" or	126
*	2	2 x 6 - 16	End bridging joists	)No.1 " W.F.orR.F. 2nd. "	(sized	32
*	4	2 x 4 - 14	Floor joists for porch	)No.2 " Y.P. 3rd. "	(if	38
*	2	2 x10 - 14	Overhead porch supports)		(practic-	47
*	1	2 x 6 - 20	" " "ends)		(able	20
*	1	6 x 6 - 12	Underpinning	Heart Cedar or Redwood	Rough	36

Note:- The item underpinning includes sufficient material shown in plan. The actual amount needed will depend upon the slope of the ground of each particular building site. Make due allowance for this item in the lumber order. If split or round material is used this item may be eliminated from the lumber list.

Studding, Plates, Girts, Etc.

	No. Pos.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
*	1	6 x 6 - 16	Porch post (corner studs)	No.1 Common,D.F.,W.F.,R.F. or Y.P.	Rough or sized	48
*	23	2 x 4 - 16	Studs	No. 1 Common, any species	" "	136
*	8	2 x 4 - 14	Wall and partition plates	" " " "	" "	75
*	6	2 x 4 - 12	" " floor plates	" " " "	" "	48
*	3	2 x 4 - 16	" " " "	" " " "	" "	32
*	16	2 x 4 - 14	Girts,trimmers, and extras	" " " "	" "	150
#	8	1 x 6 - 12	Diagonal braces for buildings subject to heavy snow load			

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
		Wall Cover (Outside)			
* 625	B. F. 1x8	lapped, 6" to weather	No. 1 Common, any species	Rough	625
* 2	1 x12 -16	over windows (sides)	" " " "	"	32
* 2	5/8x 3 -16	battens " "	" " " "	"	8

Note:- First item provides for siding of height given in plan. Add more if building will be higher from the ground than shown in plan.

Roof Frame and Cover, 1/4 Pitch, 2' Eaves & Gable Projections
(Elevations up to 2000 Feet)

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
# 11	2 x 4 - 14	Ceiling joists	Same as floor joists	Rough	103
# 22	2 x 4 - 12	Rafters 2' O.C.	" " " "	"	176
# 2	1 x 6 - 12	Ridge pole	No. 1 Common, any species	"	12
# 6	1 x 6 - 16	Collar beams	Same as floor joists	"	48
# 75	B. F. 1x12	Gable end cover	No. 1 Common, any species	"	75
# 18	B. F. 5/8x3	" " " battens	" " " "	"	18
# 2	1 x 4 - 12	Rafter ties to joist near plate	No. 1 " " "	"	8
# 208	B. F. 1x4	Roof sheeting, 8" O.C. except eaves	No.2 " " "	"	208
# 2	2 x 4 - 12	Gable studs & girts	No. 1 " " "	"	16
# 4250	- -	Shingles, (Roof) 4½" to weather	Star A Star, Red Cedar		
# 3	1 x 6 - 16	Saddle boards	No. 1 Common, any species	"	24
# 6	1 x12 - 16	Sheeting 18" rafter projection	" " " "	"	96
# 4	2 x 6 - 12	Barge boards	" " " "	"	48
# 4	1 x 2 - 12	" " trim	No. 2 Clear " "	"	8
# 2	1 x 6 - 16	Frieze boards gable ends	No.1 Common, any species	"	16
# 3	1 x 6 - 12	Rafter frieze (between rafters)	" " " "	"	18
# 4	1 x10 - 16	Soffit for gable projection	No. 1 Common " "	"	54
# 1	2 x 8 - 16	Sills for louvre	" " " "	"	22
# 2	1 x 8 - 12	Jamb and slats for louvre	" " " "	"	16

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
		Roof Frame and Cover, 1/3 Pitch, 18" Eaves and Gable Projections (Elevations between 2000 and 3500 Feet)			
# 84	B. F. 1x12	Gable end cover	No. 1 Common, any species	Rough	84
# 21	B. F. 5/8x3	" " " battens	" " " "	"	21
# 11	2 x 6 - 14	Ceiling joists	Same as floor joists	"	154
# 22	2 x 6 - 12	Rafters 2' O. C.	" " " "	"	264
# 2	1 x 8 - 12	Ridge pcle	No. 1 Common, any species	"	16
# 5	1 x 6 - 12	Collar beams	Same as floor joists	"	30
# 5	1 x 6 - 16	Angle struts (°)	" " " "	"	40
# 3	1 x 6 - 16	King struts (°)	" " " "	"	24
# 4	1 x 6 - 12	Rafter ties to joist near plate	No.1 Common, any species	"	24
#216	B. F. 1x4	Roof sheeting 8" O. C. except eaves	No. 2 " " "	"	216
# 2	2 x 4 - 14	Gable end studs and girts	No.1 " " "	"	19
#4250	- -	Shingles(Roof)4½" to weather	Star A Star, Red Cedar		
# 3	1 x 6 - 16	Saddle boards	No. 1 Common, any species	"	24
# 6	1 x12 - 16	Sheeting 18" rafter projection	" " " "	"	96
# 4	2 x 6 - 12	Barge boards	" " " "	"	48
# 4	1 x 2 - 12	" " trim	No. 2 Clear, " "	"	8
# 2	1 x 6 - 18	Frieze boards gable ends	No. 1 Common, " "	"	18
# 3	1 x 4 - 12	Rafter frieze (between rafters)	" " " "	"	12
# 2	1 x 6 - 18	Soffit for gable projection	" " " "	"	18
# 2	1 x 8 - 18	" " " "	" " " "	"	24
# 1	2 x 8 - 16	Sills for louvre	" " " "	"	22
# 2	1 x 8 - 12	Jambs and slats for louvre	" " " "	"	16

Note:- At elevations where snow fall is less than two feet, the items after which the mark (°) appears should not be ordered or used.

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
		Roof Frame and Cover, 1/2 Pitch, 18" Eaves and Gable Projections (Elevations over 3500 Feet)			
# 11	2 x 6 - 14	Ceiling joists	Same as floor joists	Rough	154
# 22	2 x 6 - 12	Rafters 2' O. C.	" " " "	"	264
# 2	1 x 8 - 12	Ridge pole	No. 1 Common, any species	"	16
# 5	2 x 6 - 14	Collar beams	Same as floor joists	"	70
# 4	2 x 6 - 20	Angle struts	" " " "	"	80
# 4	1 x 6 - 14	King struts	" " " "	"	28
# 4	1 x 6 - 12	Rafter ties to joist near plate	No. 1 Common, any species	"	24
# 240	B. F. 1x4	Roof sheeting, 8" O.C. except eaves	No. 2 " " "	"	240
# 5	2 x 4 - 14	Gable studs and girts	No. 1 " " "	"	47
# 4250	- -	Shingles (Roof) 4½" to weather	Star A Star, Red Cedar		
# 3	1 x 6 - 16	Saddle boards	No. 1 Common, any species	"	24
# 6	1 x12 - 16	Sheeting 18" rafter projection	" " " "	"	96
# 4	2 x 6 - 12	Barge boards	" " " "	"	48
# 4	1 x 2 - 12	" " trim	No. 2 Clear " "	"	8
# 4	1 x 6 - 12	Frieze " gable ends	No. 1 Common, " "	"	24
# 3	1 x 6 - 12	Rafter frieze (between rafters)	" " " "	"	18
# 4	1 x 6 - 12	Soffit for gable projection	" " " "	"	24
# 4	1 x 8 - 12	" " " "	" " " "	"	32
# 128	B. F. 1x12	Gable end cover	" " " "	"	128
# 42	B. F.5/8x3	" " " battens	" " " "	"	42

No louvres for 1/2 pitch roof.

	No. Pos.	Size	Purpose & Location	Grade and Species	Finish	B Bd.Ft.
		Outside Trim.				
#	1	4 x 4 - 20	(For 4 brackets)For 1/4	No. 1 Common, any species	Rough	27
#	1	2 x 4 - 12	(" 4 ")1/3 pitch Roof	" " " "	"	8
		OR				
#	1	4 x 4 - 16	(For 6 brackets)For 1/2	" " " "	"	22
#	1	4 x 4 - 14	(" 6 ")pitch	" " " "	"	19
#	1	2 x 4 - 14	(" 6 ")Roof	" " " "	"	10
*	2	1 x 6 - 16	Belt course gable ends	" " " "	"	16
*	4	1 x 6 - 12	" " Sides over windows	" " " "	"	24
*	2	1 x 4 - 16	Water table gable ends	" " " "	"	11
*	3	1 x 4 - 14	" " sides	" " " "	"	14
*	2	1 x 6 - 18	Corner boards	" " " "	"	18
*	2	1 x 6 - 16	" "	" " " "	"	16
		Porch Material.				
*	2	1 x 6 - 16	Porch post trim	" " " "	"	16
*	2	1 x 8 - 16	" " "	" " " "	"	22
*	1	1 x 4 - 12	" skirt boards	" " " "	"	4
*	1	1 x 8 - 14	" soffit	" " " "	"	10
*	1	1 x 8 - 12	" " ends	" " " "	"	8
		Steps.				
*	1	1½x10 - 8	Treads	" " D.F. or Y.P.	"	10
*	1	1 x 8 - 8	Risers	" " " " "	"	6
*	1	1 x12 - 12	Stringers and base	" " " " "	"	12
		Flooring.				
*	350 B. F.	1x4	Flooring, vertical grain, T & G	"C" Grade, California, any species or No. 2 Clear, Douglas fir		

Inside Walls and Ceiling Cover - Choice of

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
# 280	B. F. 1 x12	Ceiling & porch ceiling	No. 1 Common, any species	Rough or S1S	280
# 70	B. F.5/8x 3	" " " " battens	" " " "	" " S4S	70
# 480	B. F. 1 x12	Inside wall cover	" " " "	" " S1S	480
# 120	B. F.5/8x 3	" " " "	" " " "	" " S4S	120
	OR				
# 260	B. F. 1x4	Ceiling (without porch) T & G	"C" Grade, California, any species or No.3 Clear, Oregon D.F.		260
# 580	B. F. 1x4	Wall Cover T & G	Same as above		580
	OR				
# 340	B. F. 1x8	Shiplap ceiling and porch ceiling	" " "		340
# 558	B. F. 1x8	Shiplap wall cover	" " "		558

Note:- Add to the lumber order your choice of above wall and ceiling cover and specify rough or surfaced as indicated.

Inside Trim.

No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
* 4	1 x 6 - 14	Base boards	No. 2 Clear, Y. P.	S4S	28
* 2	1 x12 - 12	Shelves, etc.	No. 1 " any species	S4S	24
#150	Lin. ft.	1" Quarter round mould, if interior walls are T & G or shiplap			
#150	" "	1"x1" strips, rough if rough lumber wall finish or S4S if surfaced 1 x12 wall cover is used.			

	No. Pcs.	Size	Purpose & Location	Grade and Species	Finish	Bd.Ft.
			Window and Door Frames Complete	- Including inside and outside casings, stops, blind stops, parting strips, stools and aprons - if made on the job.		
#	1	2 x10 - 16	Sills	No. 2 Clear, D. F. or Y. P.	S1S	27
#	3	1 x 8 - 12	Jambs	" " R.W.,Y.P., or C.	S1S	24
#	1	1 x 8 - 18	" (door)	" " " " " "	S1S	12
#	3	1 x 6 - 12	Casings (outside)	" " " " " "	S4S	18
#	1	1 x 6 - 18	" "	" " " " " "	S4S	9
#	2	1 x 4 - 12	Window stool & aprons	" " " " " "	S4S	8
#	3	1 x 2 - 12	Blind stops	" " " " " "	S4S	6
#	3	½ x 1 - 12	Parting strips	" " " " " "	S4S	3
#	1	1 x 4 - 18	Casings, inside	" " " " " "	S4S	6
#	4	1 x 4 - 12	" and jambs inside	" " " " " "	S4S	16
#	4	1 x 4 - 14	As above	" " " " " "	S1S	19
#	96	Lin. Ft.	½"x 1½" door and window stops			

Note:- All window and door frame material should be ordered as indicated above; if impracticable to purchase surfaced, order No. 1 Clear, rough. If mill or factory made frames can be purchased it is advisable to buy them in lieu of above material. See Mill Order List "Doors and Windows."

Mill order list - Doors and Windows

* 1 2'8" x 6'8" - 1½" Colonial, one light 24" x 26", 21 oz. glass, 3 cross panel door
See Cut B. M. No.-3
* 1 2' x 6'8" - 1½" " 5 cross panel door
* 1 1'8" x 6'8" - 1½" " 5 " " "
* 3 2'6" x 4' - 1½" Lip rail, two lights, 21 oz. glass windows

Note:- If mill or factory made frames can be purchased order them with inside and outside casings, stops, blind stops, parting strip, stool and aprons.

# 1 Frame for 2'8" x 6'8" - 1½" outside door (with sill) complete as specified above
# 1 " " 2' x 6'8" - 1½" inside " (no sill) casing one side only
# 1 " " 1'8" x 6'8" - 1½" " " " " " " " "
# 3 " " 2'6" x 4' - 1½" lip rail windows (no weights)

Note:- The outside casings for doors and windowsframes are to be 6" wide and inside casings 4" wide; all inside door frames are to be cased on both sides with 4" casings unless otherwise specified.

SPECIFY THICKNESS OF WALLS for each door and window frame and submit blue print of Sheet 5 (which shows frames in detail) when factory or mill made frames are purchased.

Cupboard.

*	6	1 x12 - 16	See detail 6-C	No. 2 Clear, R.W., Y.P., C., or D.F.	S4S	96
*	1	1¼x12 - 8	" " "	" " " " " "	S2S	10
*	1	½ x14 - 16	" " "	" " " " " "	S2S	19

Note:- Two drawers to be made in place of map case.

Hardware List.

*	4	#	30d.	Common nails,	frame
*	12	#	20d.	" "	"
*	25	#	10d.	" "	"
*	10	#	10d.	" " ,	roof sheeting
*	20	#	10d.	" "	outside cover
*	5	#	8d.	" "	miscellaneous use
#	6	#	10d.	Casing "	window and door frames if made on job
					or
#	2	#	10d.	" "	window and door frames if not made on job
*	4	#	10d.	" "	finish, etc.
*	8	#	8d.	" "	flooring and finish
#	8	#	6d.	" "	ceiling and walls if T & G or shiplap
					or
#	12	#	8d.	" "	ceiling and walls if 1 x12 material
*	½	#	3d.	Finish "	window stops, etc.
*	16	#	3d.	Fine galvanized shingles	
*	3	#	2d.	" " "	over eaves only
*	40	'	4"	Galvanized iron flashing, 30 gauge	
*	3	pr.	3½	Half surface butts A.C. hinges	
*	3			Rim latches #8052, knobs #9241	
*	6	pr.		Window spring bolts	
*	1	doz.		Coat hooks #92-J	
*	2	pr.		Cupboard door hinges #1474 D-2 - 2"	
*	2			Drawer pulls #5074 A.C.	
*	2			Cupboard catches # 4800 A.C.	

Note: - Numbers following items of hardware are Pacific Hardware and Steel Company's catalogue numbers. See hardware list in Building Material Section.

FLUE MATERIAL.

The builder shall always submit Details 6-A or 6-B with orders for flue materials. This is important.

Irrespective of the pitch of roof, the articles following, before which the mark (*) appears, are to be ordered:

* 1 6" Terra cotta bottom joint
* 1 6" " " straight "
* 1 26 gauge, galvanized drip ferrule (see cut) made to fit over the roof plate on lower end and to fit snugly around the galvanized pipe mentioned below at upper end

1/4 Pitch Roof -

1 Galvanized roof plate, 26 gauge, with pipe projection to fit around 6" terra cotta pipe for 1/4 pitch roof (See Detail of District 5 Standard Flue)
4'2" Length, 26 gauge, galvanized pipe made so as to slide inside 6" terra cotta pipe. On bottom it shall be made to fit on to standard 6" black iron stove pipe. On its top shall be riveted a plain, convex storm hood of standard design. The builder should solder the drip ferrule to this pipe for support and to prevent leakage.

1/3 Pitch Roof -

1 Galvanized roof plate, 26 gauge, with pipe projection to fit around 6" terra cotta pipe for 1/3 pitch roof (See Detail of District 5 Standard Flue)
5'4" Length, 26 gauge, galvanized pipe made so as to slide inside 6" terra cotta pipe. On its bottom it shall be made to fit on to standard 6" black iron stove pipe. On its top shall be riveted a plain, convex storm hood of standard design. The builder shall solder the drip ferrule to this pipe for support and to prevent leakage.

1/2 Pitch Roof -

1 Galvanized roof plate, 26 gauge, with pipe projection to fit around 6" terra cotta pipe for 1/2 pitch roof (See Detail of District 5 Standard Flue)
7'8" Length, 26 gauge, galvanized pipe made so as to slide inside 6" terra cotta pipe. On bottom it shall be made to fit on to standard 6" black iron stove pipe. On its top shall be riveted a plain, convex storm hood of standard design. The builder shall solder the drip ferrule to this pipe for support and to prevent leakage,

* 1# Cement and 1.3# clean sand for each joint of terra cotta.

Where snow fall exceeds 30", install the flue protector shown in Detail 6-B. The builder shall add material necessary to build the protector.

Paint.

*	4	gals.	Regulation outside body gray paint
*	$1\frac{1}{2}$	"	" " trim white "
*	3	"	" " roof green "
*	1	gal.	" Floor paint
*	2	lbs.	Putty
*	3	pcs.	Sand paper No. 1
#	1	gal.	Boiled linseed oil
#	$\frac{1}{2}$	"	Turpentine

If Laird and Sinclair paint is used, omit linseed oil and turpentine and add:

#	1	gal.	Aroturps for each 5 gallons of outside paint on order list.

See Painting section in this manual for interior painting. Select choice and quantity of paints or stain needed and add to the paint order list.

Cement.

See specifications for all cement work if concrete foundations are practicable for this building.

SPECIFICATIONS

for

ONE ROOM FIREMAN'S DWELLING

14' x 20'

(Including Porch)

These specifications are intended to embrace all material necessary in the erection and completion of the building in all its parts, and to furnish such instructions as appear necessary to give the builder a general idea of the plan. Variations due to different locations and accessibility of lumber markets have been considered and estimates prepared accordingly.

The general plan as regards construction of frame and other vital parts of the structures is to be followed unless permission to deviate from the plans and specifications has first been secured from the District Forester. Deviations of minor consequence, however, may be made by the builder to take care of unforeseen local conditions and circumstances.

EXCAVATION.

Excavation for the foundation of the building shall be carried down to solid earth. The bottom of the excavation shall be level and smooth. Where necessary to grade into unlevel ground for the purpose of providing a level building site, the slopes of the excavation resulting must clear the sides of the building by at least 3 feet. If necessary, provision should be made to prevent earth caving from the embankment from contacting with the sills and foundations if of wood.

FOUNDATIONS.

Foundations should be either of -

(a) 6"x6" heart cedar, redwood or Douglas fir underpinning, set upon substantial flat stones of sufficient thickness to project at least 4 inches above the ground. Wood blocks should never be used for footings under foundation posts.

(b) If substantial stones are not available, provide a masonry or concrete footing. For masonry use only hard stones, preferably flat ones. All should be carefully imbedded on their broadest faces in mortar of 1 part cement and 2 parts coarse, clean, sharp sand. Each layer should be well filled and flushed up on both sides and firmly bonded together. The tops should be made level to receive the underpinning. See Table No. C-4.

(c) Large stones of sufficient thickness to raise the sill to a height of at least 12 inches above the ground.

(d) Blocks of masonry or concrete at least 12 inches high, 10 inches wide on top and 16 inches square at the bottom. The top of concrete and masonry blocks should be made level to receive the sills. See Concrete Section, and Table No. C-4.

(e) If water and sewer pipes are to be placed under a building, foundation blocks or underpinning must be at least 24 inches high.

MATERIALS.

All structural materials should conform as closely as possible to the specifications given in the builder's list and lumber order list. That minor deviations must some times be made is recognized as unavoidable.

SILLS.

Should preferably be of cedar or redwood. Douglas fir may be used as a second choice.

Set rectangular sills with narrow edge up.

Sills at corner should be halved together. When two or more pieces are necessary to form the total length of sill a splice should be made on the foundation supports, as indicated on the plan. (See Cut No. B. M. - 9.)

Two or more joints should not occur on the same line of foundation posts. Arrange to have the splices made over foundation posts of different sets.

ROOF.

Materials for roofs at different elevations are provided. At elevations within the ranges mentioned use the roofs of stated pitches. Exception to the above should occur only where snowfall is not a source of hazard as on some of the southern Forests and on the Modoc.

Rafters and other members of the roof frame should be of selected straight grain lumber; 1st choice Douglas fir, 2nd choice white fir, 3rd choice yellow pine, free from knots and other imperfections. Too much attention cannot be given the selection of the best sticks of the lumber order for rafters.

Where roof trusses are used fasten the members securely with 10d. nails in members one inch thick and with 20d. nails in members two inches thick.

Care should be taken to cut the rafters true in order that they rest firmly on the plate and meet squarely at the apex of the roof.

Roof projections should be sheeted solid with 1"x12" rough or dressed lumber.

Rafter ends should be finished in the manner illustrated by the diagram "Section."

Use for roof covering either -

(1) Star A Star red cedar or redwood shingles

(2) Shakes of white fir or sugar pine

(3) Lay shingles 4½" to weather on sheeting 8 inches on center. Nail them with 3d. fine galvanized shingle nails. Lay the bottom course of shingles double and project it 1½ inches beyond the sheeting. Allow a one inch projection of shingles over the barge board trim. Table No. B. M.-2

gives data on shakes. If shakes are used allow 1½ inches projection at eaves and 1 inch projection over barge board trim.

– The ridge of the roof should be finished with 1"x6" boards.

FLOOR JOISTS, STUDDING, BRIDGING, ETC.

To have all joists and studs sized or made even in width is desirable. Where practicable to have material sized, do so. If impracticable, rough material may be used. To size it by hand may be necessary. Joists should be of selected sticks, straight grain and free from all knots larger then 1 inch in diameter; 1st choice being Douglas fir, 2nd choice white fir, 3rd choice yellow pine. Studding, headers, trimmers, plates, etc., may be of any straight grain material free from loose knots and knots which materially weaken the stick. Lay floor joists directly upon the sills. Where two joists form the span, use the lap joint; in all cases place the bow of the joists up. Place solid 2"x6" bridging at the ends of each joist. If span exceeds 12 feet, place 2"x4" cross bridging in the center. (See Cut No. B. M. -9)

Lay the floor first. Then, place floor plates for both inside and outside walls on top of it.

Make corner studs of 2"x4" scantling spiked together. (See Plan) The corner posts should be assembled before installing them. Place studs on top of floor plates. Double the top plates. In splicing, lap them, at least 4 feet and arrange to have the ends of the lap fall over studs.

Double headers over window openings and door openings. If shingle siding is used, double trimmers also.

Place girts of 2"x4" scantling horizontally in all outside walls midway between the top and bottom plates.

Place girts of the same size as the studding for backing for the outside skirt parts. (See plan).

At elevations of 3000 feet and over brace the studs with 1"x6" piece cut into the studs, to such a depth that the outside faces of the braces are flush with the outside face of the studs. (See Cut No. B. M.-9)

Place ceiling joists directly over plates. Nail them securely to the rafters and nail them to the plate. If the building will be subject to snow load for ceiling joists, give particular care to the selection of good straight grain sticks free from knots larger than 1 inch in diameter and other imperfections that would weaken the stick. Use five 20d. wire nails for nailing the ceiling joist to the rafters and two 20d. wire nails to toe nail them to the plate.

SIDING.

The plan illustrates the method to follow in placing siding.

The boards used for siding must be free from loose knots, all knots tight or loose having a diameter greater than 1½ inches, weather cracks, rot disfigurements and large pitch pockets. Set the first board horizontally at the bottom on a 1"x2" strip which should be nailed to the studs. Exercise care in spacing the siding in order that the lap on each board will be equal. Nail the siding with 10d. nails at top and bottom on to each stud.

Nail the vertical boarding securely with 3-10d. nails at each nailing place. Fasten the battens with 6d. or 8d. nails set opposite each other on 12" centers. Clinch the nails on the inside.

PORCH AND STEPS.

Construct porches as shown by the plan.

In all cases give porch floor a slope of 1/4" per foot of run, to assure proper drainage.

The amount of material for steps will depend upon the height of the underpinning used, whi which in turn will depend upon the slope of the site. The builder should keep this in mind and if more or less material is needed, than included in the material lists, due allowance should be made. Sufficient material for steps is included for underpinning of the height shown in the plan.

Always place step risers onfootings of stones. Meet step risers to stringers. Nail steps securely to both risers and stringer.

LOUVRE BRACKETS AND BARGE BOARDS.

At elevations where snowfall is light, louvres located in each gable end may be installed. Do not install louvres in regions where snowfall is heavy. Brackets and barge boards should be installed as delineated in drawings. Note that the material lists provide more brackets for roofs designed to carry heavy snow loads than for roofs that will not.

INSIDE FINISH.

Any accessible kind of inside finish may be used, preferably shiplap or beaded or plain ceiling. When ordering from California mills specify "C" grade; when ordering from Oregon mills or yard specify "No. 3 Clear". When milled lumber is not available, dressed or rough lumber with 3/8"x2" or 1/2"x2" strips, over cracks, may be used. A 1"x6" base should be extended around each wall.

MOULDING.

Place moulding in all corners.

1st. choice - 7/8"x7/8" quarter round
2nd. " - 3-corner moulding
3rd. " - dressed or rough strips 1"x1"
4th. " - 1/2"x2" battens

FLUES.

See Details No. 6-A and 6-B. In regions where snowfall is deeper than 2½ feet, if the flue is installed 3 feet or more from the apex of the roof, place the protector shown in Detail 6-B back of the flue. In placing joints of pipe below the roof line see to it that they are so spaced that the joints passing through the roof will be set as shown in the drawing. In some cases, to accomplish the proper position of the joint which passes through the roof, one of the lower joints will have to be cut. Excepting where the bottom joint rests upon its support, the terra cotta should be not closer than 1½" to wood work. Guy the top of the flue securely with three guys of No. 9 or No. 12 telephone wire. Place all flues before shingling the roof.

DOORS.

Order doors of the dimensions given on the plan and fit them with locks and hinges as given in the estimate.

DOORS AND WINDOWS.

Order doors and windows, and hardware for them, according to the specifications given in the material lists. Equip at least one outside door with Forest Service rim locks. Equip both upper and lower window sashes with two spring bolts. To accomodate the bolts provide 1/4" holes at desired height in the window jambs.

WINDOW AND DOOR FRAMES.

Buy factory made frames if practicable. If impracticable order the necessary material and make them on the job in accordance with the plans illustrated on Detail 6-D. Care should be exercised in placing the studding at all openings in order that the frames may be plumbed properly. Allow at least 1/2" play on each side, also on the top and on the bottom. Exercise care in setting the frames and see to it that they are set plumb and that they are properly centered. Flash over the windows with 4" No. 30 galvanized iron strips. Where rough board siding is used set the frame casings directly over the siding. Cover holes by notching 1"x2¼" strips along side of casings.

CUPBOARDS AND CLOSETS.

Build cupboards according to details shown in the plan and place them as shown in the floor plans.

Where an office cabinet is desired, build in accordance with plan shown in Detail 6-C.

Provide closets with two 1"x12" shelves and a 1"x4" strip for wardrobe hooks. Place hooks on 18" centers.

PAINTING.

Color - Body -Standard gray (2 coats)
Roof - Roof - " green " "
- Trim - " white " "
Inside - any color satisfactory
to the occupant (2 coats)

Floor - any color (3 coats)

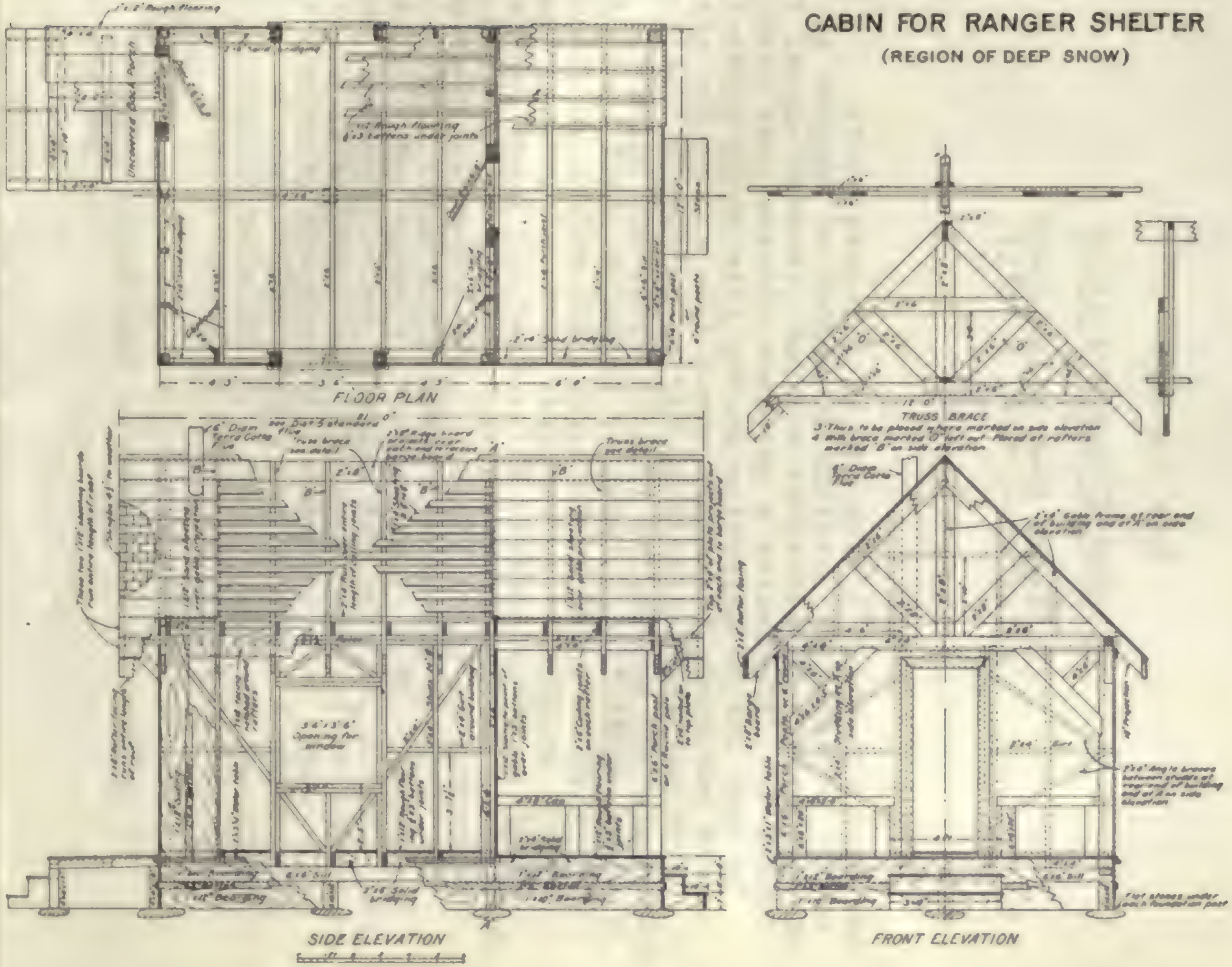
If the lumber is dry, give the outside and roof a priming coat as soon as the siding is placed; put on the second coat as soon as the first is thoroughly dry. Do not apply paint if lumber is not thoroughly seasoned or if the surface is damp from rains, fogs, frosts, etc. Before applying paint to knots, cover them tightly with a coat of shellac. Do not paint during damp weather. Before applying the paint to interior, the surface should be carefully cleaned. All nail holes should be filled with putty, colored to match finish. To have a real fine finish sand the surface. (See paint section of the circular)

The floor should receive three coats of floor paint.

PLAN NO. 4 D

CABIN FOR RANGER SHELTER

(REGION OF DEEP SNOW)


FLOOR PLAN
1"x2" Rough flooring
Uncovered Back Porch
1x6" Rough flooring
2x3 battens under joints
6' 3"
3' 6"
4' 3"
6' 0"
12' 0"
Steps
TRUSS BRACE
3 - Thus to be placed where marked on side elevation & with brace marked "O" left out. Placed at rafters marked "B" on side elevation
18' 0"
6" Diam. Terra Cotta Flue
2"x6" Gable frame at rear end of building and at "A" on side elevation
2"x6" Angle braces between studs at rear end of building and at "A" on side elevation
Flat stones under each foundation post
FRONT ELEVATION
21' 0"
See Det. 3 standard flue
Truss brace see detail
3'4"x3'6" Opening for window
SIDE ELEVATION

PLAN NO. 4-D

CABIN FOR RANGER SHELTER

(Regions of Deep Snowfall)
12'0" x 18'0" - 8' Walls

Items preceded by the mark (*) are standard and are not subject to change or choice. Conditions of the local lumber markets, and the isolation of certain building sites from markets carrying a varied stock of lumber are factors which will govern selection of the type of outside and inside wall cover, trim and sizes and kinds of nails. Elevation of the particular building site will determine the slope of roof to use and the dimensions of the roof frame material to order. All items subject to change or choice are indicated by the mark (#). To prepare a complete order list, select the items marked (#) which, under the particular circumstances, will be best adapted for use at a given building site. Add such items to those marked (*). To all items of lumber add the specifications shown under "Grade and Species" and "Finish". For example, two pieces 4" x 6" - 16' No. 1 Common, redwood, cedar, Douglas fir or pine, rough. To all items of hardware add only such descriptive matter as is necessary to adequately describe each item. For example, 2 pounds 30d. common wire nails - 3 pounds 30d. fine galvanized wire nails. Do not show on the order list the purpose for which the hardware items are to be used.

Estimated cost of construction - labor at $4.00 per day, $70.

BUILDERS' MATERIAL LIST

No. Pcs.	Size	Purpose & Location	Grade & Species	Finish	Bd. FT.
1	6 x 6 - 12	Foundation Posts	Heart cedar or juniper	Rough	36
	(This item may be omitted if cedar material can be split out on the ground)				
	Sills				
2	6 x 6 - 18	Side Sills	No. 1 Common, Cedar or Dg. Fir	"	108
2	6 x 6 - 12	End Sills	" " " " "	"	72
1	4 x 6 - 18	Center Sill	" " " " "	"	36
1	4 x 4 - 18	Back porch	" " " " "	"	24
	Joists and Bridging				
6	2 x 6 - 12	Floor Joist	No. 2 Clear, any species	"	72
1	4 x 6 - 12	" "	" " " "	"	24
3	2 x 4 - 12	Porch Floor Joists	" " " "	"	24
1	4 x 4 - 12	" " "	" " " "	"	16
1	2 x 6 - 12	Solid Bridging End	" " " "	"	12
1	2 x 6 - 18	" " Sides	" " " "	"	18
1	2 x 4 - 12	" " Porch "	" " " "	"	8
10	2 x 6 - 12	Ceiling Joists	" " Dg. Fir	"	120
2	2 x 4 - 12	Run over ceiling joists	" " any species	"	16

No. Pcs.	Size	Purpose & Location	Grade & Species	Finish	Bd. Ft.
		Posts, Studding, Girts, Plates & Braces			
2	4 x 4 - 16	Corner Posts	#1 Common, any species	Rough	44
1	6 x 6 - 16	Porch "	" " "	"	48
1	6 x 6 - 12	" Baluster Posts	" " "	"	36
1	4 x 8 - 14	" " Capping	" " "	"	38
18	2 x 4 - 16	Wall Studding	" " "	"	192
3	2 x 4 - 12	Gable Studding	" " "	"	24
2	2 x 4 - 12	Back End Plate	" " "	"	16
2	2 x 4 - 12	Plate over Front Wall	" " "	"	16
1	4 x 6 - 12	" " Porch	#2 Clear, Dg. Fir	"	24
2	2 x 4 - 22	Side Plates - Top 30	#1 Common, any species	"	30
2	2 x 4 - 12	" " - Bottom	" " "	"	16
1	4 x 4 - 12	" " - Porch	#2 Clear, Dg. Fir	"	16
1	2 x 4 - 12	Toe Pieces & Plates, Closets	#1 Common, any species	"	8
1	2 x 4 - 16	Header at window opening	" " "	"	11
1	2 x 4 - 12	Header at door opening	" " "	"	8
3	2 x 4 - 12	Girts	" " "	"	24
2	2 x 4 - 18	Angle Braces, Sides	" " "	"	24
3	2 x 4 - 14	" " Ends	" " "	"	28
1	2 x 4 - 12	" " "	" " "	"	8
1	4 x 6 - 14	Porch Plate Braces	" " "	"	28
1	4 x 4 - 12	Barge Support Brackets	" " "	"	16
		Roof			
10	2 x 6 - 20	Rafters	#2 Clear, Dg. Fir	"	200
1	2 x 8 - 18	Front Gable Trim & Supports	" " "	"	24
2	2 x 8 - 12	Ridge Board	#1 Common, any species	"	32
5	1 x 8 - 14	Hangers for Truss	#2 Clear, Dg. Fir	"	47
5	2 x 6 - 14	(Collar Beam on each set of Rafters)	" " "	"	70

No. Pos.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
2	2 x 6 - 18	Angle truss braces	No.2 Clear, Dg. Fir	Rough	36
1	2 x 6 - 12	" " "	" " " "	"	12
1	2 x 4 - 18	" " toe "	" " " "	"	12
2	1 x 6 - 12	Short angle braces on each set of rafters	" " " "	"	12
4	1 x 6 - 12	Ridge cap	" " " "	"	24

Siding, Sheeting, etc.

No. Pos.	Size	Purpose and Location	Grade and Species	Finish	Bd.Ft.
6	1 x12 - 12	Gable siding	No.1 Common any species	"	72
24	1 x12 - 16	Upright siding	" " " "	"	384
2	1 x12 - 18	Horizontal siding	" " " "	"	36
2	1 x10 - 18	" "	" " " "	"	30
2	1 x12 - 12	" "	" " " "	"	24
2	1 x10 - 12	" "	" " " "	"	20
2	1 x12 - 18	Side Fascia Board	" " " "	"	36
1	1 x12 - 18	End " "	" " " "	"	18
30	1 x 3 - 16	Battens, sides	" " Y.P.	"	120
8	1 x 3 - 16	" gable	" " "	"	32
2	2 x 8 - 20	Barge boards	" " any species	"	54
4	2 x 8 - 12	Rafter fascia boards	" " " "	"	64
4	1 x12 - 12	Solid sheeting over eaves project	" " " "	"	48
2	1 x12 - 20	" " " " "	" " " " "	"	40
4	1 x12 - 14	" " over rear gable	" No. 1 " " "	"	56
8	1 x12 - 16	" " " front " & porch	" " " "	"	128
	1 x 4	Random length - roof sheeting 8" O.C.	" " " "	"	140
2	1 x 6 - 12	Roof comb board	" " " "	"	12
1	1 x 6 - 20	" " "	" " " "	"	10
3	2 x 3 - 12	Water table	No. 2 Clear, Y.P.		18

No. Pcs.	Size	Purpose & Location	Grade & Species	Finish	Bd. Ft.
	Flooring & Ceiling				
12	1 x 12 x 18	Flooring	No. 1 Common, any species	Rough	216
14	½ x 3 x 18	Battens	No. 2 Clear pine "	"	126
2	1 x 12 x 12	Flooring Back Porch	" Clear, pine	"	24
12	1 x 12 x 12	Ceiling	" " "	"	144
12	½ x 3 x 12	Battens	" " "	"	36
	Finishing Material				
8	1 x 12 x 12	Bupboard Shelves, etc.	No. 2 Clear, pine	"	96
4	1 x 6 x 12	Cupboards, etc.	" " "	"	24
	Steps				
1	2 x 12 x 14	Stair Runs	No. 2 Clear, pine	"	28
2	1½ x 10 x 18	Stair Steps	No. 1 Common, Dg. Fir	"	45
2	1 x 8 x 18	" Risers	No. 1 Common, any species	"	24
	Extras				
4	2 x 4 x 12		No. 1 Common, any species	"	32
4	1 x 6 x 12		" " " "	"	24
4	1 x 12 x 12		" " " "	"	48

No. Pcs.	Size	Purpose & Location	Grade & Species	Finish	Bd. Ft.

Mill Order List

Doors and Window Frames

* 2 Frames for outside Doors 2'6" x 6'8" x 1½" complete with trim and threshold for 6" walls
* 1 Frame for inside Door 1'10" x 6'1¼" complete with trim for one side only
* 2 Frames for Windows 3'6" x 3'6" x 1½" complete with trim and stool without sash weight provisions, for walls 6" thick

Submit detail No. 6 D with order for door and window frames and cupboard doors

1 Colonial Sash Door 2'6" x 6'8" x 1½"
1 Colonial 5-panel Door 2'6" x 6'8" x 1½"
1 O.G. Door 1'10" x 6' x 1¼"
2 Windows 3'6" x 3'6" x 1½", glazed with 16-oz. glass
1 Cupboard Door 2' x 3'3" x 7/8"
1 " " 2' x 3'8" x 7/8"

4000 Red Cedar Shingles, first quality

If impracticable to buy factory frames, order:

Frames

No. Pcs.	Size	Purpose & Location	Grade & Species	Finish	Bd. Ft.
6	1 x 8 - 14	Jambs and casing	No. 2 Clear, Pine	Rough	56
2	1 x 8 - 20	" " "	" " "	"	27
1	2 x10 - 12	sills	" " "	"	20
4	½ x 2 - 14	stops	" " "	"	10
1	1 x 8 - 12	stools	" " "	"	8
1	1"x12 - 14	Doors	" " "	"	14
1	½"x 2"- 14	Doors	" " "	"	3

Hardware List

6#	60d	Wire Nails
4#	40d	"
4#	30d	"
35#	20d	"
50#	10d	"
15#	8d	"
14#		Fine Galvanized Shingle Nails
5#	8d	Finish Nails
2#	6d	"
1#	4d	"
2 pr		Loose Pin Butt Hinges 3"x3" with screws
1 "		" " " " 2½"x2½" "
3		Cast Rim Knob Locks "
2		" Sash Locks "
3		Spring Sash Bolts
2		Cast Sash Lifts "
2 pr		Solid Pin Cupboard Door Butts 1¾" x 1¾"
1 dz		Common Wardrobe Hooks
3 joints		6" Terra Cotta Socket Flue, one joint of which flanged for use as a bottom member
12#		Cement
12#		Sand
1		Roof Plate to fit over 6" half pitch
1		piece pipe 26 gauge galv. iron 6" in diameter, 10 feet long with storm cap riveted on top. Bottom end shall be made to fit over standard 6" stove pipe.
1		Galv. drip ferrule 26 gauge The builder should solder the drip ferrule to the pipe after it is placed

SPECIFICATIONS

PLAN 4 D.

CABIN FOR - RANGER SHELTER

(Region of Deep Snow Fall)

12' x 18' - 8" Walls

This building is designed to fulfill a need for an extra strong small cabin in regions where snow fall is exceedingly heavy as for example - on certain parts of the Plumas, Tahoe and Eldorado, and at perhaps other places within the Sierra Nevadas. The structure as drawn will support any snow load of either roof or side pressure that will ever occur.

These specifications are intended to embrace all material necessary in the erection and completion of the building in all its parts and to furnish such instructions as appear necessary to give the builder a general idea of the plan. They are written in much detail since where these buildings will be erected expert labor will be scarce; therefore inexperienced labor will perhaps be used to put up the house in most cases. The general plan as regards construction of frame and other vital parts of the structure is to be followed unless permission to deviate from the plans and specifications has first been secured from the District Forester. Deviations of minor consequence, however, may be made by the builder to take care of unforeseen local conditions and circumstances.

EXCAVATION.

A level site must always be provided. If necessary to excavate sloping ground to provide this, the excavations should be level and smooth and perfectly solid throughout. Never place the structure on loose shifty soil. Where necessary to grade into unlevel ground for the purpose of providing a level building site, the sides of the excavation must clear the building by at least 3 feet and the rear of the excavation must give a clearance of at least 6 feet. Snow on slopes settles with the plane of the hill. The settling action represents an enormous force. The wide clearance at the rear is necessary, therefore, to prevent the settling snow from pushing the building off its foundation.

FOUNDATIONS.

Foundations shall be of blocks of heart cedar or juniper, at least 6" square or 8" round and 12" high set upon substantial flat stones of sufficient thickness to project at least 4" above the ground. Under the sides, foundation blocks shall be spaced as shown in the drawing.

Under the ends one block shall be placed in the center. The side blocks support the corners: Under the center blocks shall be placed on 6 ft. centers. At the bottom the foundation blocks under the center sill shall be tied to the opposite outside block on either side by 1"x4" ties.

SILLS.

Sills should preferably be of heart cedar. Douglas fir may be used as a second choice. At the corners the sills shall be halved together and securely toe-nailed with 20d wire nails. The ends of the center sill shall be halved into the end sills and down nailed with 60 d nails. Sills shall be toe nailed into foundation posts with 60 d nails.

FLOOR JOISTS, STUDDING, BRIDGING, ETC.

To have all joists and studs sized or made of even width is desirable. When practicable to have them sized, do so. If impracticable, rough material may be used. To size some of it by hand on the job may be necessary. For floor joist any lumber of any species may be used; 2"x6" solid bridging shall be placed between the ends of floor joists on both sides of the building. Ceiling joist shall be of straight grain Douglas fir. They carry a great part of the roof load and must, therefore, be of selected stock. Use no material for ceiling joist having solid knots larger than ½" in diameter. Material with loose knots or other weakening defects shall not be used.

Studs shall be placed directly on the sills and spiked to the floor joists. They shall also be toenailed into the sill. Corner studs shall be 4" x 4". At the front 2" x 4" furring studs shall be placed as shown in the drawing. These are placed to carry the plates. The outside furring stud shall be 2" shorter than the 4" x 4" stud. This allows for the installation of 4" x 4" plate at the side over the porch. Girders and angle braces shall be placed as shown in the drawing. They shall be fastened with 10 d wire nails. Header and trimmers at door and window openings shall be double. The plates over the living room shall be 2" x 4" double with lapped joints at the rear corner. Porch plates on side shall be 4" x 4" under with an extension of 2" x 4" top plates of the building placed over the top. This over plate shall extend the full length of the building and out to receive the barge boards. It shall be securely nailed to the under plate at 6" center with 30 d nails. The front porch plate shall be 4" x 6" Douglas fir of same grade as the ceiling joists. At the front corners an angle tie of 1" x 6" x 2'10" shall be placed to tie the side and front plates together. This brace shall be nailed with 10 d nails.

ROOF.

Rafters shall conform to the specifications given for ceiling joists. They shall be braced as shown in the plan. Truss brace as shown in upper right hand corner shall be placed where indicated by the words "Truss Brace" "See detail". On sets of rafters Marked B. the angle struts shall be omitted and only vertical strut and short angle rafter ties shall be used The vertical strut shall be notched around the ridge board and around the 2" x 4" runner which shall be nailed to the top of the ceiling joists. The angle struts where used abutt on to the top of the ceiling joists and shall be fastened by nailing a plate on both sides of 1" x 6" stuff to them and the ceiling joist. These side plates are indicated by the dotted line. The gable ends at the rear and over the front door shall be studded with 2" x 4" studs placed as indicated by the dotted line in the gable of "Front Elevation" on the drawing. The gable over the porch shall be open with 2" x 8" braces as shown. The braces at the upper end abutt on to the outside rafter and shall be fastened with 1" x 8" plates on the inner side which shall be nailed to the rafters and braces. At the lower end they abutt on to the 4" x 6" plate and are nailed to the 2" x 6" collar beam just behind. The projection is 18" on sides and on the ends. Brackets of 4" x 4" pieces (the drawing through error gives dimensions 2" x 4") shall support the 2" x 8" barge board at the conners. At the gable the 2" x 8" ridge board shall project to form the upper support. An additional block of 2" x 8" shall be nailed to the side of the projecting ridge board to give a good nailing surface for fastening the barge board. The rafter ends shall be finished with a 2" x 8" fascia board. The sheeting shall be placed as shown in the drawing. Shingles shall be laid 4½" to weather with 3d fine galvanized nails. The bottom course of shingles shall be laid double and shall project 1½" beyond the sheeting. A 1" projection of the shingles shall be made over the barge board.

1" x 6" board shall be used for ridge finish.

FLUES:

See Detail 6 A. The flue and protector shall be made as shown in Detail 6 A. Place the flue before shingling the roof. Note that it shall come out of the roof within 12" of the ridge. The stove may be set at any place desired. Elbows shall be used to direct the pipe from the stove to the flue.

SIDING.

Siding above and below the water table shall be placed as shown in the plan and also at rear gable and the gable over the front door. Siding shall be nailed at each end and at each girt with 3 - 10d nails. One 10d nail shall be placed at each angle brace. The bottom board of siding below the water table shall be nailed with 3 - 10d nails at each foundation post. The top board shall be nailed with 3 - 10d nails to the sill and bridging at 3" centers. 1" x 3" battens fastened with 8 d nails on 12" center shall be placed over all cracks. The ends of the 8 d nails shall be clinched on the inside. This is important. Expansion and contraction soon loosen the battens unless the nails are clinched. A facia board of 1"x12"x18" shall be notched around the rafters. At the gable ends facia boards of 1"x18" shall be placed. The water table shall be dressed down to the following cross section dimension 1" front - 2" back - 3" width. A trim board of 1"x4" shall be run around the building over the siding underneath the water table. Flashing 4" wide of 30 guage galvanized iron shall be placed over the water table and back of the siding. It shall project out from the other edge of the siding 3/4" and shall be fastened with 3d fine galvanized nails 3 inches apart. Flashing of similar dimension shall be placed over each window and over the rear door.

PORCHES AND STEPS.

The drawing plainly indicates the construction of the porch. Note that both the front and rear porches have a drop of two inches below the floor of the building. If lumber is dry in placing flooring on the porches a space of ½" between each board shall be allowed. Braces over porch shall be notched 1" into posts and plate as shown. Step run shall be made of 1"x12" board double on each side.

FLOORING & CEILING.

1" x 12" material with ½"x 3 battens to close the cracks shall be used for flooring unless matched flooring is readily available. The wall and ceiling shall be covered with 1"x12" material with ½"x3" battens over cracks. The corner shall be finished with ½"x3" battens and 1½"x2½" battens. A base board of 1"x6" shall be extended around the room.

DOOR & WINDOWS & FRAMES.

Door and windows shall be ordered as listed. Frames shall be ordered from the mill if practicable. If not practicable to purchase mill made frames the material listed for home made frames shall be ordered and the frames shall be made on the job in accordance with detail of window and door frames of this circular - Cut No. 6-D. Shutters of 1"x12" lumber on a 1"x4" frame and a protector of the same material shall be made for covers for the windows and back door. They shall be attached at the close of each field season with 10d. wire nails partly driven in.

CUPBOARD AND CLOSETS.

The plan indicates the location of the closet and cupboard. The cupboard shall be built with two sections. The base section with one shelf shall be 4 feet in height. The door shall be hung with a 2 inch strip between it and the floor and a strip of similar dimension between its top and the top of the base. The upper section shall be extended to the ceiling. The door at the base shall swing flush with the base and at the top a strip approximately 3 inches wide shall be placed or of a width sufficient to make a snug fit at the top of the door. The division between the base and top sections shall project out 6 inches. This will serve as a rest for dishes, etc. In the upper section shelves shall be placed approximately 12 inches apart. The closet shall be provided with common wardrobe hooks.

PAINTS.

Color - Outside	Body -	Standard	gray,	2 coats
	Roof -	"	green	2 "
	Trim -	"	white	2 "

If the lumber is dry, give the outside and roof a priming coat as soon as the siding is placed; put on the second coat as soon as the first is thoroughly dry. Do not apply paint if lumber is not thoroughly seasoned or if the surface is damp, from rains, fogs, frosts, etc. Before applying paint to knots, cover them tightly with a coat of shellac. Do not paint during damp weather. Before applying paint to interior, the surface should be carefully cleaned. All nail holes should be filled with putty, colored to match finish. To have a real fine finish sand the surface. (See paint section of the circular.)

FOOD BOX.

If a box for storing food is desired sufficient scraps of lumber will be available for it. It shall be 2'5" deep and 2' wide and 3' in length and lined with galvanized window screen or tin from kerosene cans. A box of the dimensions given will fit under the window.

OBSERVATION BOOTH

1/2 PITCH ROOF

The following list of materials is complete, including hardware and paint:

Items indicated by the mark (*) are not subject to choice. Items subject to choice are indicated by the mark (#). To prepare a complete order select the materials to be used, and add to the items marked (*) your selection of materials marked (#). To all items of lumber add the specifications shown under "grade and species", and "finish". For example, 2 pcs. 4 x 6 - 16 No. 1 Common, Redwood, cedar, Douglas fir or pine, rough. Following items of hardware add only such descriptive matter as is necessary to adequately describe the item, for example - 2# 30 d. Common wire nails, 3# 30 d. fine galvanized shingle nails. The amount of underpinning to be used is not given since this will depend upon the slope of the building site and the height of the foundation footings used. Add to the lumber list the materials needed for underpinning at each particular building site.

Estimated cost of construction - labor at $4.00 per day - $50.00.

BUILDER LIST OF MATERIAL

No. Pcs.	Size	Purpose and Location	Grade & Species	Finish	Bd. Ft.
* 2	4 x 6 - 16	Sills	No. 1 Common, RW, Ced. DF. or P.	Rough	64
* 3	2 x 4 - 14	Joists and End Bridging	" " any species	"	28
* 1	2 x 4 - 12	Joists	" " " "	"	8
* 5	1 x12 - 16	Flooring	" " D.F. or Pine	"	80
* 2	2 x 4 - 16	Plates (double)	" " any species	"	21
* 2	2 x 4 - 14	" "	" " " "	"	19
* 3	2 x 4 - 16	Hip rafters	" " " "	"	32
* 4	2 x 4 - 12	Jacks and headers	" " " "	"	32
* 1	2 x 4 - 14	Header (3 sides of building)	" " " "	"	9
* 13	1 x 4 - 16	Sheathing 8" O.C. for roof shingles	No.2 Common any species	"	69
*500		Shingles 5" to weather for roof	Star A Star, Red Cedar		
* 2	2 x 4 - 14	Window trimmers	No. 1 Common, any species	"	19
* 1	2 x 4 - 12	" "	" " " "	"	8
* 2	2 x 4 - 14	Seat frame, 3 sides building	" " " "	"	19
* 1	1 x12 - 12	Seat, 3 sides building	" " " "	"	14
#	4 x 6	Underpinning	" " RW. Cedar or D. F.	"	
	Table				
* 2	2 x 4 - 14	Table legs and top frame	No. 1 Common, any species	"	19
* 2	1 x 4 - 12	Braces and table skirting	" " " "	"	8
* 1	1 x12 - 10	Table top	" " " "	"	10
* 1	½ x 6 - 6	Map box material	" " " "	S4S	3

	No. Pcs.	Size	Purpose & Location	Grade & Species	Finish	Bd. Ft.
		Siding				
*	2	1 x 4 - 14	Frieze	No. 1 Common, any species	Rough	10
*	3	1 x 2 - 14	Water table	" " " "	"	7
*	2	1 x 10 - 14	Base board outside	" " " "	"	24
*	3	1 x 4 - 16	Corner boards	" " " "	"	16
*	1	1 x 6 - 16	" "	" " " "	"	18
#	(7	1 x 12 - 16	Siding, 3 sides	" " " "	"	112
#	(5	1 or 5/8 x 3 - 16	Siding Battens	" " " "	"	23
		or				
#	(10	1 x 4 - 16	Sheating, 3 sides for shingles			51
#	(750		Shingles 5" to weather	Star A Star, Red Cedar		
		or				
#		Drop siding rustic		No. 2 Common, Pine, cedar, Douglas fir or redwood		142
*	3	4 x 4 - 16	Corner posts (6)	No. 1 Common, any species	"	64
		or				
#	3	5" dia.- 16	Poles	" " " "	Peeled	
		Balustrade				
*	1	2 x 4 - 18	Hand and lower rails	" " " "	S4S	12
*	2	1 x 4 - 14	Balusters 6" O.C.	" " " "	S4S	10
		or				
*	1	4" dia. 18' long, hand and lower rail		Pole " " "	Peeled	
*	2	4" dia. 14' long, balusters 6" O.C.		Pole " " "	Peeled	

	No. Pcs.	Size	Purpose & Location	Grade & Species	Finish	Bd. Ft.
			Windows			
*	3		Single sash, one light, width 3' x 1'6" height x 1½", 16 oz. glass			
			Window Frames			
*	1	2 x 8 - 12	Sills	No. 1 Common, any species	Rough	16
*	2	1 x 6 - 12	Jambs	" " " "	"	12
*	1	1 x 6 - 12	Side Casings	" " " "	"	6
*	2	1 x 4 - 14	Head casings and aprons	" " " "	"	10
*	1	1 x 2 - 18	Stops	" " " "	"	3
			Hardware			
*	2#	30d	Common wire nails, frame			
*	5#	20d	" " " "			
*	8#	10d	" " " "			
*	7#	8d	" " " sheeting roof, flooring, seat, table, etc.			
*	3#	3d	Fine galvanized shingle nails for roof			
#	3#	3d	" " " " if shingle siding is used			
#	3#	8d	Common for sheeting if shingle wall cover is used			
#	3#	10d	" if rough board and battens wall cover is used			
#	2#	8d	" battens if rough board and batten wall cover is used			
*	1/5#	4d	Finish for map box			
*	2#	5d	Galvanized nails to fasten hip capping on roof			
*	15		Lin. Ft. Galv. flashing (30 gauge) 4" wide			
*	6		Hippcapping, Galvanzied iron (26 gauge) 8" wide, 7' long			
*	1		Galvanized iron, 26 gauge, cone cap. See detail.			

Anchor bolts to be used only when other means of anchoring is not practicable.

6	½" x 14" headless bolts with nuts and washers
10'	Cement

Flag Pole

	No. Pcs.	Size		
#		Preferably furnish blacksmith with details and have made.		
		Paint		
*	1 1/2 Gal.	Standard Body, Gray paint	(walls)	
*	1/2 "	" Roof, Green "	(roof)	
*	1/2 "	" Trim, White "	(trim)	
#	1/2 "	Boiled linseed oil.		
		If Laird & Sinclair paint is used, eliminate linseed oil and add -		
#	1 Gal.	Aroturps to each 5 gals. of paint on list.		

SPECIFICATIONS

FOR

OBSERVATION BOOTH

These specifications are intended to give such instructions as appear necessary in order that the carpenter in charge of the work may follow the general idea of the plan and builder's material list. Variations due to different locations and accessibility to lumber markets have been considered and estimates prepared accordingly.

It is understood that the carpenter shall have the right to exercise his judgment in making any necessary minor changes during the progress of the building, but the general plan should be followed unless permission to deviate from it has first been secured from the District Forester.

FOUNDATION.

Foundation footing should preferably be either of rock masonry or large flat rocks. If of masonry the stone should be hard. The lower courses should be laid with large flat rocks, all to be carefully bedded on their broadest faces in mortar of one part Portland cement and two parts coarse, sharp, clean sand, well screened and free from loam or silt. Each layer should be well filled and flushed up on both sides and firmly bonded together, and flat rocks should have at least 2 sq. ft. of bearing surface. The tops of foundation footing must be level and must project at least 4" above the surface of the ground. Foundation blocks are to be placed under each of the six corners.

This type of building may be erected sometimes where heavy winds constitute a factor of danger. In such cases bolt the building to the Foundation. Foundation blocks in such localities should always be large, or better still, if possible set the building on solid rock. Figure No. 1 on out Rec. No. 1 indicates method of bolting sills to the footing of the building.

In addition to the above provisions of safety, the building should be guyed with No. 9 wire from 4 corners.

MATERIALS.

All structural materials should conform as closely as possible to the specifications given in the builders materials list. That minor deviations must sometimes be made is recognized as unavoidable.

SILLS.

Success of good workmen in the completed structure depends largely upon placing the sills set in a true hexagon shape. A simple way to set the sills in true hexagon position is to cut the pieces of equal length and of the lengths shown in the plans (sheet 2.) Set a stake in the center of the building site. The top of the stake should be flush with the proposed level of the sills. Drive a small nail into the center of the top of the stake and use a piece of 1" x 4" 4' 6" long for a radius stick to designate the position of the corner of the building. If all 6 corners of the frame space out the length of this pole the frame is true. 7" on the tongue and 12" on the blade of a square will give a true hexagon cut. Care must be taken to set the corner posts true since the upper plate must be true to make a proper base for the rafters.

Sills should be of heart cedar, redwood or heart Douglas fir.

FLOOR JOISTS, STUDDING, ETC.

Floor joists, studding, headers, trimmers, plates, etc., may be of any straight grain material free from loose knots and knots which do not materially weaken the stick. Floor joists should be laid directly on the sills.

Corner posts may be of 6" straight grained poles for a substitute for 4 x 4 posts.

ROOF.

Care should be taken in cutting the rafters in order that they will rest firmly on the plate. Cut main hip rafters of length as shown in the drawings and set all six rafters on plates before nailing at apex. After hips are in place cut in rafter girts 2'10" from apex. Then place common rafter with a square and butting into the girts.

Roof projections should be sheeted solid with 1" x 12" rough or dressed lumber.

Rafter ends should be finished in the manner illustrated by the diagram "Section."

Either Star A Star shingles or redwood, sugar pine or white fir shakes may be used. Shingles should be laid 4½" to the weather on sheeting 8 inches on center. Shakes should be laid 11" to the weather on sheeting similarly spaced. For roof Galvanized iron nails only should be used.

SIDING.

Rough lumber siding should be free from loose knots and knots of a diameter greater than 1-1/2".

Siding of shiplap or rustic should be of No. 3 Oregon or C. California grade. No material having loose knots should be accepted. If shingles are used they should be Star A Star red cedar.

Sufficient siding of the different kinds above mentioned is included in the estimate to cover a building of the elevation shown on the diagram. The amount of material needed will vary according to the height of the foundation posts.

RAIL.

The rail may be made of either milled lumber or poles. If poles are used the rails should be 4" in diameter and balustrade 2" in diameter, set 4" O. C.

WINDOWS AND INSIDE FINISH.

Three sashes are to be provided and cased as shown in drawings. The height may be either lowered or raised to suit local conditions.

Benches are to be provided as shown in drawings.

A hexagon table should be installed as shown in detail sheet 3. If locator is to be used the height should be 3'4" and if map holders are installed the height should be 2'6", the height of a common table.

FLAG POLE.

Detail of iron flag pole is shown on Sheet 3. This should be bolted to roof with 1/4 x 2½ bolts. In no case is a built in wooden pole to be installed.

PAINTING.

Exterior walls are to be given two coats of standard body paint. All trim is to be given two coats of outside white. Roof is to be given two coats of standard roof paint, except the ridge and flag pole which are to be same as the trim.

Interior walls should be given 2 coats of standard outside body paint.

Do not apply paint in foggy or rainy weather, or to unseasoned wood.

For plans of the Observation Booth see Cut No. Pub.- 1., Sheets 1, 2 and 3 of the Section on Recreational Improvements, Public Service.

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